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CROSS-SECTORAL ISSUES

The relationship between demographic trends economic growth, unsustainable consumption patterns and environmental degradation

Report of the Secretary-General of the Conference

I. INTRODUCTION

1. The Preparatory Committee, at its second substantive session, in its decision 2/6 requested the Secretary-General of the Conference to continue to study the interrelationship between environment and development, taking into account decision 1/25 of the Committee at its first session, which identified main elements of this relationship. The present report was prepared in response to this decision.

2. In preparing this report the UNCED Secretariat utilized contributions commissioned from the Ecological Systems Analysis Group, of Argentina Pontificia Universidade Catolica de Rio de Janeiro, of Brazil, the Indira Gandhi Institute of Development Research of India, and the Institute of World Economy and International Relations of the USSR Academy of Sciences. A study was contributed by the World Resources Institute, of the United States. Many other sources of information were also consulted.

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II. BACKGROUND

3. The pressure of human activities impinges on the environment essentially through the use that humans make of the environment for meeting their consumption needs. These demands on the environment are function of per capita consumption standards and the number of people. These in turn are determined by value systems and other socio-cultural factors, and by income levels and other economic factors. In order to understand the links between growth and environmental degradation, it is necessary to look simultaneously at demographic developments and consumption patterns, in the context of value systems technological developments and policy orientations which help or hinder efficiency of resource use. The present report will review these issues and address main policy conclusions.

III. DEMOGRAPHIC TRENDS

4. Population growth has been sustained since the period of the Industrial Revolution. There has, however, been a recent acceleration since the 1950's, following a sharp reduction of mortality rates in developing countries. From 1950 to 1990 world population grew from 2.5 to over 5 billions, at an annual rate of 1.9 per cent. These overall figures cover important variations among regions and country groupings.

5. In developed countries, which account for 1.2 billion people, fertility rates have abated and population growth is slow, stabilization has occurred in a number of countries. As a result of this trend, the population of developed countries is gradually aging, which has various consequences such as financial pressures on the pension arrangements. The trend towards urbanization which characterized the period from 1950 to 1980 and led to an average proportion of urban population exceeding 70 per cent in developed countries has now almost stabilized and is not expected to change significantly.

TABLE 1A. Population Growth rates of the less developed regions

	1950-1955	1985-1990	2020-2025
Africa			
Eastern Africa	2.3	3.2	2.1
Middle Africa	1.8	3.0	2.2
Northern Africa	2.3	2.7	1.3
Southern Africa	2.3	2.4	1.4
Western Africa	2.3	3.2	2.0
Latin America			
Caribbean	1.8	1.5	1.0
Central America	2.9	2.3	1.3
South America	2.8	2.0	1.1
Asia			
Eastern Asia	1.8	1.3	0.4
South-eastern Asia	1.9	2.1	1.0
Southern Asia	2.0	2.3	1.1
Western Asia	2.7	2.8	1.7

Source: **World Population Prospects 1990** (United Nations publication, forthcoming).

TABLE 1B. Percentage of population living in urban areas and urban population, 1990-2025

Region	Urban areas (percentage)			Urban population (in millions)		
	1990	2000	2025	1990	2000	2025
World total	45	51	65	2.4	3.2	5.5
Less developed regions	37	45	61	1.5	2.3	4.4
More developed regions	73	75	83	0.9	0.9	1.1

Source: **World Urbanization Prospects 1990** (United Nations publication, forthcoming).

6. In developing countries, which account for 4.1 billion people, both birth and death rates have dropped, but to a lesser and differentiated extent, as is shown in Table 1A. Population growth rates continue to be substantial in various developing regions.

7. These fast growing populations will lead to a changing population structure in the years ahead: a labour force growing overall at a rate of 2.3 per cent until the year 2000, (varying from 1.2 per cent a year in China, through 2 per cent in South Asia and East Asia, 2.4 per cent in Latin America, to 3 per cent and over in West Asia and Africa) and a child-dependency ratio which will range from 70 per cent in West Asia and sub-saharan Africa, though 50-60 per cent in Latin-America, South Asia and North Africa, to about 40 per cent in East Asia. The trend towards urbanization has been gaining momentum, and is expected to continue well into the 21st century, until urban population rates in developing countries, as is shown in table 1B reach levels over 60 per cent. This urbanization trend has led to the development of megacities of several million inhabitants. Providing adequate shelter and employment opportunities for rapidly increasing urban population is a great challenge. (See Human Settlements, ...)

8. World population is projected to reach 6.3 billion in 2000, and approximately 8.5 billion in 2025 according to the medium variant projections of the United Nations. Depending on how population programmes will be successful, it could reach 10 million or more by the first quarter of the next century. It could eventually stabilize, depending on how fast fertility rates are reduced, between 2050 and 2100, at levels between 10 and 14 billion. Most of the population increase (over 90 per cent) is to take place in presently developing countries and most of it in cities. Coping with this urban explosion will be a primary challenge of the 21st Century.

IV. ECONOMIC GROWTH

9. Economic growth has reached an unprecedented scale in this century. It is estimated that global GDP was in the order of $US 600 billion in 1900. It was about $US 5 trillion in 1960 and about $US 17 trillion in 1988, the world economy having grown at an average annual rate of 3.64 per cent over the 1960-1988 period. For developed market economies, the growth rate was

3.5 per cent over the period, and for developing countries 4.26 per cent. Among developing countries, regional rates were 3.25 per cent in Africa (2.53 per cent in Sub-Saharan Africa, 4.58 per cent in North Africa), 3.84 per cent in Latin America, 6.02 per cent in South and South-East Asia, 3.31 per cent in West Asia.

10. Growth rates declined in recent decades. Table 2 shows rates of economic growth in the various region during the 1970's and 1980's. Per capita output fell in the 1980's in many developing countries of Latin America and Africa.

Table 2: Growth of world output, 1971-1990, per capita GDP and share of world population by country groups

	Growth of GDP (annual rate)		GDP per capita (US dollars) a/		Share of world population 1990 (per cent)
	1971-1980	1981-1990	1980	1990	
Developed market economies	3.1	2.6	10 200	12 500	15.6
Eastern Europe and the Soviet Union b/	5.2	2.5	3 200	3 800	7.8
Developing coutries	5.6	3.2	760	850	76.7
Africa	4.9	0.5	750	580	11.7
Western hemisphere	5.5	1.0	2 320	2 090	8.5
South and East Asia	5.8	7.0	380	570	52.4
China	5.9	9.0	290	610	21.7
West Asia	6.5	0.2	4 180	3 000	2.5
Mediterranean	5.3	3.2	1 940	2 210	1.5
World	3.9	2.9	...	...	100.0

Source: **Department of International Economic and Social Affairs of the United Nations Secretariat.**

a/ In 1980 prices.

b/ Net material product.

11. As a result of these growth trends, developed and developing countries accounted in 1988 for $US 14.71 trillion and $US 2.48 trillion in the $US 17.19 trillion world GDP. Their shares in global economic output were respectively over 85 per cent and under 15 per cent, while their shares in world population were 23.3 per cent and 76.7 per cent. The gap in per capita output has been widening during the 1980s. The ratio between per capita output in developed market economies and developing countries was 13.42 in 1980 and 14.7 in 1990.

12. Long-term economic growth predictions do not have a record of great accuracy. It is envisaged on the basis of observed trends that the world economy could grow fivefold by the middle of next century.

13. While growth of economic activity has brought substantial social benefits and improved the welfare of many in some regions, the situation of developing countries continues to be characterized by considerable poverty: out of approximately 4 billion people in developing countries, over 1 billion live below the poverty line; more than 150 million children are malnourished; over 1,750 million adults are illiterate; some 1,500 million people have no access to health services, 2,800 million people have no access to sanitation (UNDP's Human Development Report 1990). Among the disadvantaged, the situation of women and children, who are subjected to the worst deprivations, should be stressed. The situation of indigenous peoples, who are often marginalized and deprived of access to power, should also be noted. It is urgent to improve living standards in developing countries, and the required economic development will involve accelerated economic growth.

14. Overall economic growth represents the aggregation of activities in the various economic sectors. The level and pattern of resource use in the different sectors generates a variety of environmental problems which are the issues identified in General Assembly resolution 44/228. The manner in which selected sectors of human activity affect the environment is briefly outlined below. This description should be read in the context of the more detailed analysis presented in the background documents submitted to the Preparatory Committee.

(a) Agriculture

15. Through its process of soil use and alteration of the vegetation cover, agriculture has an impact on the soil in modifying its structure and composition, and on the flora and fauna it supports. In a number of ways, agriculture has a positive influence on the environment, for instance through drainage systems and its effects on flood control and water quality. Many traditional agricultural practices contribute substantially to the preservation of the environment. At the same time, the introduction of chemicals to the land affects the food chain, water systems and the air. Agricultural malpractices may lead to soil degradation through erosion, salinization, compaction and pollution. Increasing intensity of agriculture may also cause loss of biodiversity.

(b) Forestry

16. Forest management can have beneficial effects on the environment however detrimental effects may be generated if the forest cover protecting a fragile soil is affected, for instance on steep slopes. The ground may become waterlogged or otherwise impoverished. The regulatory effect of forests in water catchment areas, which helps better infiltration of rain and snowfall and reduces flood levels, may also be diminished. Forest exploitation may also reduce the diversity of tree species and such simplified ecosystems offer fewer niches for wild life.

(c) Fisheries

17. Marine fisheries provide 10 to 20 per cent of world protein intake. Properly managed such a contribution would be sustainable. But in recent years global fishery harvests were on average about 85 per cent of the

estimated maximum sustainable yield and on an increasing trend. Overfishing has depleted individual species in the past and has, in some regions, deprived people of the income and food derived from this resource. The resource is also threatened, particularly in coastal areas, by pollution.

(d) Industry

18. Among industries, a few sectors play an especially important role in most raw materials consumption and pollution. The agro-food industry, mining and reprocessing, cement production, pulp and paper processing, oil refineries and chemical industries are among such sectors. Industries have a substantial role in row materials and energy consumption, water consumption, emissions of nitrogen oxide and sulphur oxide emissions, emissions of greenhouse gases, pollution of water through biological oxygen demand and suspension substances release, generation of non-inert waste and the discharge of toxic substances. The rate of innovation which results in fast product diversification of products complicates the issue as it is difficult to predict the possible environmental impacts of the large number of new substances produced especially in the chemical industry. Risks related to accidental discharges of toxic substances cause considerable concern, as does the inclusion of hazardous substances in products of industry which are marketed, utilized and have to be ultimately disposed of.

(e) Transport

19. Transport services are necessary for the development of other economic activities and represent a substantial share of economic output. They have numerous environmental consequences: emission of air pollutants involving health risks in cities and ecological impacts at regional level. Transport are responsible for a considerable share of CO, NOx, hydrocarbons, benzene and atmospheric lead emissions, as well as for CO2 and CFC emissions. Land utilization for transport infrastructures, the related rubble disposal and the recycling of metals from decommissioned vehicles also constitute environmental issues. Pollution of marine environment through oil discharge and the risks posed by the transport of hazardous substances are another instance of environmental impact as is consumption of energy (see below) metals and other non-fuels by the transport sector. A high death toll results from transport accidents, mainly road transport. Noise pollution and traffic congestion should also be mentioned.

(f) Energy

20. Energy supplies are necessary for the development of other economic activities. The energy sector performs extraction, conversion, transport and consumption of energy and disposes of energy wastes. Energy sources include coal and other solid fuels, oil, gas, nuclear power, hydropower and other renewable sources of energy, as well as electricity. Issues related to energy use are mentioned in the discussion of other economic sectors above. While important advances have taken place in energy efficiency of numerous economic activities and in the fuel - efficiency of vehicles, the operation of the energy sector continues to generate considerable environmental impacts such as, the emission of CO2 and other "greenhouse gases", the emission of SOx, NOx and hydrocarbons, the generation of radioactive waste, the risks of nuclear

reactor accidents decommissioning problems in the nuclear power industry, deforestation due to firewood consumption, health risks to workers in energy industries (coal mines, oils fields, nuclear reactors, etc...), oil spills, land use issues related to mining, solid waste disposal from various energy-related installations, etc.., so that a solution to the energy related environmental impacts would constitute an important step towards sustainable development.

(g) Human Settlements and Tourism

21. The importance of human settlements for the environment hardly needs to be stressed. The issue is addressed in detail in the report contained in document A/CONF.151/PC/56. Its relationship with land-use, transport needs and energy consumption is evident. Human settlements are also strongly linked to patterns of atmospheric and water pollution, both of marine and fresh water resources. Explosive urban growth underway in developing countries makes human settlements a central issues for impacts of human activities on the environment. Tourism, which also grows in an accelerated manner, represents a form of human settlements, whose effect is compounded by its often intermittent and seasonal character, so that the imbalance between infrastructures for environmental protection and peak pressures tends to be even more pronounced than in urban areas. Its impacts on coastal and mountain environments should be particularly noted.

(h) Military Activities

22. The relationship between the military sector and the environment deserves a special mention. Beside the very large financial resources devoted to it, (probably in the 3 to 5 per cent range of global GDP), this sector has important environmental impacts which are related to its operating mode, destruction power being a fundamental characteristic and the ability to generate negative impacts on humans and their environment a criterion of effectiveness. In addition to its claim on land use, its consumption of energy and various other non-renewable resources, including many rare metals, the military sector concentrates the use of toxic, radioactive and other dangerous substances. Environmental protection rules can at best be internally applied, as secrecy prevents the identification and correction of many negative impacts on the environment. Emission standards do not apply to weapons systems. It should be noted in this context that many military tests are conducted in sparsely populated areas which are the habitat of indigenous peoples. The negative ecological impact in peace time is substantial. In war time, destruction is the goal. There is, first of all, the toll in human lives: several hundred thousand this year alone in various armed conflicts. Massive devastation caused by World War II, the use of defoliants in subsequent conflicts, the recent use of oil spills and oil well fires as tactical actions and the impact on economic infrastructure described as near-apocalyptic by a recent United Nations report are but a few examples of the effects of wartime military operations on environment and development.

V. ENVIRONMENTAL DEGRADATION AND CONSUMPTION PATTERNS

23. Humans have always modified the environment in order to meet their needs. Such modifications in themselves do not constitute environmental problems. Problems arise when the nature and extent of the modification is such that it compromises the ability of other groups to meet their needs, where these other groups could be future generations. It could also be that the way in which one particular need, let us, say, for energy, is met, compromises the ability to fulfill some other need, say, for good health.

24. In recent years, the scale and depth of human interventions in nature are increasing and the pace of change is also accelerating. The rising scale of intervention can be seen in the proportion of freshwater diverted for human use, in the level of energy use, in the growth of megacities, etc. The increasing depth of interventions in nature is illustrated by human interventions in the development of plant varieties which has progressed from selective breeding of naturally found varieties, to cross-breeding and hybridisation and now to genetic manipulation. With the growth of the chemicals and synthetics industry, pressures on the natural environment in one sense may have reduced but in another sense, the depth of intervention in nature has increased as natural systems have to cope with exotic substances leading often to problems of toxicity and hazard. All of this is leading to environmental problems which cannot be managed sufficiently on an ad hoc basis by an individual decision maker or even by a local community. There are some effects which are essentially global and regional in character, like the risks of climate change, the depletion of the ozone layer, transboundary air pollution, marine pollution, depletion of marine resources, etc. There are certain others like a loss of biodiversity or of forest cover, which though local in character, could have larger consequences. More localised problems of land degradation, air and water pollution are now found in so many localities that they in effect have to be treated as national, regional and global issues. A detailed analysis of these effects is presented in background documents submitted to the Preparatory Committee.

25. Rising demands, human interventions in natural systems will continue to increase. It is necessary that we recognise that such interventions must respect certain limits at the local, national and global level and, in the words of the report of the World Commission on Environment and Development, "long before these are reached, the world must ensure equitable access to the constrained resource and reorient technology efforts to relieve the pressure".

C. Consumption and waste generation patterns

26. An important determinant of the scale and depth of environmental impact is consumption, which influences production levels and determines environmental impacts resulting directly from consumption. Besides, as many commodities are internationally traded, consumption is a better indicator than production of the final destination of natural resource inputs into the economy.

27. Global consumption has skyrocketed in the last decades, driven by consumption in the industrialized countries. Since the 1950s, consumption of copper, energy, steel, meat and wood has about doubled. Cement use and

automobile ownership have quadrupled. Use of plastics and aluminum has grown respectively five and seven-fold. Air travel has been multiplied by over thirty times. This fast growing consumption has generated increasing quantities of waste. It is estimated that worldwide annual emissions of sulfur dioxide have grown by over 400 per cent and nitrogen oxides by over 900 per cent in this century, reaching respectively levels of over 60 and 20 million metric tons a year. Emissions of carbon dioxide are estimated to have increased ten-fold in this century. Increasing problems and costs related to solid waste disposal are an indication of increasing quantities generated. Aluminum and plastics included in packaging constitute an increasing share, in weight and volume, of municipal waste. Along with such waste, new substances toxic in small amounts have been and continue to be developed at a rate that exceeds the possibilities of testing and regulation. Pesticides, whose very toxicity is the reason for their release pose important problems.

28. In developed market economies, a number of consumer durables - automobiles, refrigerators, vacuum cleaners, washing machines, dishwashers, stereo equipment, televisions, air-conditioning in appropriate climates - are now found in most households. Others - video cassette recorders, microwave ovens - are in the process of wide dissemination. Agricultural products such as vegetables, fruits and flowers are now transported over long distances, sometimes flown intercontinentally, in order to supply affluent markets. Intercontinental trade of beverages, including bottled water, is also widespread. Such consumption patterns serve as a model worldwide, promoted, inter alia, by universally distributed television programmes, and are adopted by the affluent in developing countries and countries in transition to a market economy.

29. The consumption patterns of specific commodities by different country groupings shows a more complex and differentiated picture. There is, for instance, a marked contrast between consumption patterns in developed and developing countries for commodities such as food and wood-based products, which affect land resources, or textiles, fertilizers, cement, metals, energy resources and vehicles, which are essential to major manufacturing and transport activities, with linkages to the atmosphere, mineral resources, the marine environment, and solid wastes.

30. Generally, consumption in developed countries largely exceeds that in developing countries, both in per capita and in absolute terms. Per capita consumption of milk and meat, sawnwood, paper, metals, coal and liquid fuels in developed countries is more than five times higher than in developing countries. For the availability of road transport vehicles, the factor is more than 10. For cement, fertilizers and textiles, the ratio is between 3 and 5. For cereals, it is below 3 and fuelwood is one case where per capita consumption in developing countries is estimated to exceed that in developed countries. In absolute amounts, cereals and fuelwood are two natural resources for which consumption of developing countries exceeds that of developed countries. For other commodities mentioned above,the consumption of developed countries is well above that of developing countries. It is more than double for metals and liquid fuels. Data on waste generation are not generally available, but regarding gross carbon dioxide (C02) emissions, it has been computed that shares in current (1988) emissions are about two-third

and one-third for developed and developing countries respectively, and that per capita emission levels are on average about 8 times higher in developed than in developing countries. For cumulated C02 emissions over the 1950-1988 period, the share of developed countries is estimated to amount to over 70 per cent (see tables 3 - 6).

Table 3: Consumption Patterns of Developed and Developing Countries for Selected Products

Products	Year	World total	% Share in World		Per capita consumption (kg)		ADR
			Dvlpd	Dvlpg	Dvlpd	Dvlpg	Dvlpd/Dvlpg
1. Consumption of land based products							
Food Products (MMT)							
. Cereals	1987	1801.33	47.6	52.4	716.7	246.6	2.9
. Milk	1987	532.88	71.7	28.3	319.5	39.4	8.1
. Meat	1987	113.51	63.8	36.2	60.6	10.7	5.7
Forest Products (MMT)							
. Round Wood	1988	2410.15	45.5	54.5	887.6	338.6	2.6
. Sawn Wood	1988	337.99	77.9	22.1	213.2	19.2	11.1
. Paper & Paperboard	1988	223.69	81.3	18.7	147.8	10.6	13.9
2. Consumption of industrial products associated with basic needs							
. Fertilizers	1987	140.52	59.6	40.4	70.1	14.8	4.7
. Cotton & Wood Fabric	1983-85	29.88*	47.0	53.0	15.6**	5.8**	2.7
. Cement	1987	1035.65	52.0	48.0	450.9	129.6	3.5
3. Consumption of Metals + Minerals							
- Metals	1987	10.35	85.5	14.5	7.4	0.4	20.6
. Copper	1987	699.14	80.2	19.8	469.3	36.1	13.0
. Iron & Steel	1987	21.63	85.6	14.4	15.5	0.8	19.1
. Aluminium							
- Minerals:							
. Chemical Products	1983-85	225.6	87.1	12.9	162.5	8.0	20.3
. Inorganic Chemicals	1983-85	391.23	84.8	15.2	274.1	16.4	16.7
. Organic Chemicals							
4. Availability of transport Vehicles	1986	370.2	91.5	8.5	0.283	0.012	23.6
. Cars	1986	105.2	85.1	14.9	0.075	0.006	12.5
. Commercial Vehicles							

* (bm^2) billion square metres
** m^2

Table 4: Availability of Transport Vehicles

Products	Year	World Total	% Share in World		Relative Per capita		ADR Dvlpd/ Dvlpg
			Dvlpd.	Dvlpg.	Dvlpd.	Dvlpg.	
Cars	1986	370.2	91.5	8.5	0.283	0.012	23.6
Commercial Vehicles	1986	105.2	85.1	14.9	0.075	0.006	12.5

Table 5: Consumption of Fuels and Electricity for 1988
Tonnes of Oil Equivalent

Item	World Total (MMT)	% Share in World		Per capita consumption (kg)		ADR Dvlpd/ Dvlpg
		Dvlpd.	Dvlpg.	Dvlpd.	Dvlpg.	
Solid	2309.12	66.3	33.7	1278.3	198.9	6.4
Liquid	2745.65	75.1	24.9	1719.6	174.6	9.8
Gas	1611.35	85.2	14.8	1146.5	60.8	18.9
Electicity	343.13	80.5	19.5	230.4	17.2	13.4
Total	7009.25	74.8	25.2	4376.2	452.8	9.7
Diesel	756.67	71.6	28.4	452.4	54.9	8.2
Gasolene	725.5	81.9	18.1	495.8	33.6	14.7
Electricity (Thermal)	7040.3 (BKWH)	77.9	22.1	4574 (KWH)	397 (KHW)	11.5
Electricity (Total)	11017	78.9	21.1	7260	598.8	12.2

Table 6: Shares in Global Emissions of CO_2 in 1988

Item	World Total (Biln. MT of C)	Share Dvlpd. (%)	Share Dvlpg. (%)	Per Capita Dvlpd.	Per Capita Dvlpg.	ADR Dvlpd./ Dvlpg.
Total Emissions	5723.6	70.3	29.7	3.36	0.43	7.81
Cum. Total Emissions (50-88)	112060.7	77.2	22.9			
Solid	2413.8	63.7	36.3	1.31	0.22	6.05
Liquid	2205.5	69.8	30.2	1.33	0.16	8.52
Gas	907.5	81.9	18.1	0.62	0.03	18.46
Flaring	47.9	25.2	74.8	0.01	0.01	1.28
Cement	148.8	48.8	51.2	0.06	0.02	3.26

VI. POLICY IMPLICATIONS

31. It appears therefore that consumption patterns in developed countries have a leading role in rapid depletion of non-renewable mineral and fuel resources, oceans pollution, land overuse and the emission of greenhouse gases. Environmental stress is generated in developing countries through two processes. A form of stress is generated by activities of the modern sector mainly in agriculture, industry and transports, which resembles that of developed countries in a smaller overall scale, thereby contributing only in a limited manner to global environmental stress, but may have acute local environmental impacts compounded in many cases by inferior environmental protection actions taken. This is particularly the case in many large cities of developing countries, where pollution levels often greatly exceed those of cities of comparable size in developed countries as well as guidelines and standards. Migration and concentration of population in coastal areas lead to forms of environmental stress detailed in the report on coastal development and enclosed seas, marine pollution, living marine resources and impacts of climate change contained in document A/CONF.151/PC/69. Another type of environmental stress is generated by poverty - urban and rural - which involves overuse of fragile land resources, deforestation, sometimes ultimate desertification through processes which are described in the report on Poverty and Environmental Degradation contained in document A/Conf.151/PC/45.

32. Rapid population growth in developing countries has not been accompanied by a commensurate increase in their share in global consumption of many resources and in waste generation. It has, however, contributed markedly to an unsustainable consumption of fuelwood, with a direct linkage with deforestation, and to pressures on coastal environments and other resources. In a number of arid countries, there is a growing imbalance between water supplies and water needs, which are related to population. Most of all, rapid population growth has acted as a brake on economic growth by diverting resources away from investment and hampering efforts to raise per capita income, education, and other ingredients of development.

33. On the basis of the definition of sustainable development given by the World Commission on Environment and Development: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs". It is clear that trends and patterns discussed above are not sustainable:

34. "The needs of the present" are far from being met, as over 1 billion people live below the poverty line, as indicated in paragraph 13 above. Global environmental threats, such as the depletion of the ozone layer, the risks of climate change, loss of biodiversity and the degradation of oceans, are clear cases of compromising the ability of future generations - worldwide - to meet their own development needs. Local environmental degradation, health impacts of pollution in cities, "acid rain" degrading forests and water supply, land degradation reducing agricultural yields, gradual depletion of non-renewable resources, even if they do not threaten equally all the human species, also compromise the ability of future generations to meet their own needs. Corrective actions are therefore

urgently needed. In addition to sectoral actions which are described in the relevant sectoral documents, conclusions regarding population trends, economic growth and consumption patterns are outlined below:

35. Concerns regarding the needs of future generations cannot be understood without a firm commitment to alleviating hardships suffered by present generations. Extreme poverty must be eliminated and living standards in currently developing countries have to be improved. In particular, nutrition, health, education and housing standards must be substantially raised. Special efforts must be made in this regard to remove the gender bias. The marginalized status of indigenous peoples should be corrected. These actions need not translate into commensurate increase in per capita output. As shown in the Human Development Report (1991) of UNDP, some improvements can be achieved through resource redeployment. However, the increase in per capita output, even if not in proportion to the improvement of living standards, will have to be important and will cause - technology assumed to remain constant - increased environmental impacts.

36. There is a need to stabilize global population as soon and at as low a level as possible. In each country, a balance should be established between population, resources and development needs. The reduction of population growth in developing countries will facilitate their economic growth and the improvement of living standards. The stabilization of world population at as low a level as possible will increase the room for maneuver for establishing an equitable and sustainable world in the next century. If efforts to curb demographic growth are successful, world population would stabilize around 2,050 at about 10 billion, about twice the current number.

37. It is essential to reduce the environmental impact of economic growth. The reduction necessary in order to make possible the improvement of well-being worldwide without increased environmental stress is of a tremendous magnitude. Technological improvements have achieved substantial efficiency increases in the past in specific areas. Economic growth has taken place in a number of developed countries since the mid-70's with no or little increase in energy consumption. In the future, such technological improvements are needed throughout the economic process and at a much faster pace: new production processes, increasingly thrifty in materials use and generating ever-decreasing waste quantities, must be developed and disseminated for widespread use. A balance will have to be found, based on environmental criteria, between the need for such fast evolution and the need for long-lasting, repairable products rather than current disposable short-life items. Packaging will need to be reoriented on the basis of environmental constraints: The utilization of reusable containers must be maximized as well as recycling of used products and packaging.

38. Many technological solutions already exist. Developments in such areas as electronics, telecommunications, new materials, biotechnology and new sources of energy open promising prospects regarding the possibility of progress towards environmentally sounder production and consumption patterns. Full use must be made of economic instruments, regulations and public information in order to bring about needed changes in scientific, technical, productive and consumption systems.

39. Developing countries, where most of population growth will take place, and where substantial economic growth is necessary, will experience considerably increased local environmental pressures and will contribute in an increased manner to global environmental pressures if improved technologies, of which many will be generated in developed countries are not deployed massively in their economic systems. From a global environment perspective, it would therefore be expedient that advanced technological systems be in certain cases deployed first in developing countries, before their widespread use in developed countries is achieved through gradual replacement of existing systems. Vigorous capacity building actions will be needed to improve the ability of developing countries to generate new technologies and to adapt and utilize technologies developed elsewhere.

40. It is clear that current lifestyles and consumption patterns of the affluent middle-class of some developed countries, involving high meat intake, consumption of large amounts of frozen and "convenience" foods, ownership of motor-vehicles, numerous electric households appliances, home and workplace air-conditioning, widespread air-travel, space - expansive suburban housing, motorized commuting and shopping, are not sustainable. Such lifestyles are shared by the affluent in developing countries and exert irresistible attraction on all. However, even after substantial efficiency improvements are brought about by technological advances, they would probably not be sustainable for a population of 10 billion. A shift is therefore necessary towards lifestyles providing substantial well-being while less geared to resource-intensive and environmentally damaging consumption patterns by emphasising quality over quantity. Such lifestyle changes will be difficult to bring about: they would require a reversal of current trends which have a strong momentum; they would go against the perceived short-term interest of important constituencies: the advertising industry, many consumer goods and services sectors would be adversely affected in the short-term; they would also go against conventional economic thinking which emphasizes output growth as the main criterion for progress and success. However, wide differences observable in environmental impacts of developed countries with comparably high living standards suggest that changed lifestyle can achieve considerable environmental progress without loss in well-being. In fact, reduced environmental impact may coincide with improved quality of life.

41. What will be required to achieve such behavior change is a change in the underlying values. The increasing importance of environment issues in national political agendas and the greater awareness of the linkages between consumption patterns and environmental impacts evidenced by the emergence of a market for environmentally friendly products is a hopeful sign in this regard. Environmental education could enhance such emerging trends. Progress achieved in reducing tobacco use in some regions shows how fast changes in perceptions and behaviours can be achieved, even with regard to addictive substances promoted by powerful advertising.

42. Bringing about the necessary changes outlined above in coming decades will require the convergent action of all: public sector, enterprises, NGOs,

as well as the general public. Institutional arrangements providing for the involvement and participation of those concerned at all levels - global, regional sub-regional, national local, even at the level of neighbourhoods, in the making and implementation of decisions would enhance the effectiveness of these actions. Building up the momentum and steering the transition towards equitable eco-prosperity in the 21st century represents the major challenge the world community has to address. UNCED is meant to contribute to this global effort.

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The International Economy and Environment and Development

Report of the Secretary-General of the Conference

I. INTRODUCTION

General Assembly Resolution 44/228 states as one of the objectives of the Conference the following:

"to examine the relationship between environmental degradation and the international economic environment, with a view to ensuring a more integrated approach to problems of environment and development in relevant international forums without introducing new forms of conditionality;"

The Resolution 44/228 also states that "the incorporation of environmental concerns and considerations in development planning and policies should not be used to introduce new forms of conditionality in aid or in development financing and should not serve as a pretext for creating unjustified barriers to trade".

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Decision 1/25 taken by the Preparatory Committee at its first substantive session in Nairobi requested the Secretariat to study amongst other things the following:

- the relationship between the external indebtedness of developing countries and the phenomenon of net transfers of resources from developing to developed countries and their ability to contribute fully and in accordance with their capacities and responsibilities to global efforts to protect and enhance the environment;

- The relationship between the international economic climate, including the need to reverse the terms of trade when these are unfavourable to developing countries, and the degradation of the environment.

The same session, in Decision 1/28, requested the Secretary-General of the Conference "to prepare a paper on the need to harmonize development objectives and sustainability and environmental considerations in deliberations on international economic policy without adding new forms of conditionality or unjustified barriers to trade, as indicated in General Assembly resolution 44/228, section I, paragraphs 15 (h) and (i), bringing out specific issues for consideration by the Preparatory Committee."

The General Assembly in its Resolution 45/210 requested the Secretary-General of the United Nations Conference on Trade and Development (UNCTAD) to prepare an analytical study of the relation between environmental issues and international trade to be submitted to the Preparatory Committee for the United Nations Conference on Environment and Development at its Third Session. The report prepared by UNCTAD in pursuance of this Resolution is placed before the Preparatory Committee as A/CONF.151/PC/48.

II. BACKGROUND

The World Commission on Environment and Development defined sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Implicit in this definition is, as regards particularly developing countries, that extreme poverty must be eliminated and that living standards of many be substantially improved, which involve economic growth. Such economic growth must however take place in a manner that does not cause the degradation of the natural resources base but instead maintain and enhance it. This sustainability constraint on the form of economic growth may lead to an increase in the initial cost of economic growth, which would however be compensated by lower costs later.

An important element of solution of this apparent dilemma between meeting the needs of the present and maintaining the ability to meet the needs of future generations is investment. Investment makes it possible to expand the productive capacity and to generate innovations and changes required to

ensure sustainability. A transition to the use of environmentally sounder technologies is tied closely to the pace and pattern of investment since it is mainly through new equipment, and facilities, etc. that such technologies can be introduced. Increased investment implies increased funding and in the absence of adequate funding the objectives of sustainable development recede into the future.

The mobilization of resources in a way that allows these multiple objectives to be met depends first on domestic policies. This involves a sound domestic macroeconomic management, including prudent fiscal and monetary policies, effective policies of financial sector development, the establishment of a stable and transparent regulatory framework as well as positive measures to encourage entrepreneurship. Equally important is the deployment of a set of market signals and incentives which promote rapid expansion of current output, efficient patterns of investment for the future and the maintenance, rational use and enhancement of the natural resource base that underpins ecological resilience and economic growth. This requires, among other things, careful assessment of the ecological impact of current pricing and of reforms designed to extend the scope of market mechanisms, the incorporation of externalities into pricing structures wherever that is feasible and the development of non-market regulation when it is not. Such economic instruments are the object of the progress Report contained in document A/CONF.151/PC/50.

External factors also affect the manner in which the multiple objectives of expanding current output, investing for the future and maintaining, using rationally and enhancing the natural resources base can be achieved. The external economy impinges on sustainable development through a variety of mechanisms, among which trade relations, financial transactions and transfers of Technology. Transfers of technology are discussed in the report contained in document A/CONF.151/PC/53. The present report will briefly discuss certain issues relating to trade and sustainable development and two mechanisms affecting particularly developing countries: unfavourable changes in terms of trade and the net transfer of resource from developing countries, in their relation with sustainable development. Consideration will also be given to the relationship between structural adjustment programmes and sustainable development.

III. TRADE AND SUSTAINABLE DEVELOPMENT

World trade today is of the order of US$ 6 trillion, the greater part of it being accounted for by the developed economies. However, the conditions governing international trade are of particular importance to the developing countries also since trade plays a crucial role in their drive towards structural transformation and growth.

In the past 40 years world trade has grown at a fast pace. This remarkable expansion in world trade has widened options for consumers and producers in many countries. It has helped to enhance the efficiency of resource use by allowing countries to specialize, to reap the economies of

scale, to upgrade technologies and to focus production in areas where they have a comparative advantage.

From the point of view of sustainability the question is whether the trade regimes and trade patterns that prevail at present help or hinder sustainable resource use. The underlying presumption of trade theory is that, with few exceptions, when trade takes place at prices which reflect real resource cost, scarce resources get efficiently allocated and economic welfare is maximized. In this perspective, trade restrictions in general reduce welfare. These presumptions of trade theory are reflected in the General Obligations of contracting parties to GATT particularly those relating to non-discrimination and the non-use of quantitative restrictions. Negotiations conducted under GATT have also aimed generally at reducing barriers to trade. The major problems of trade have arisen for the most part not from measures which enhance trade between countries but from measures which restricted trade between countries. There are however some exceptions to this particularly those related to the export of domestically banned and hazardous products.

Trade as an Instrument for Widening Options

In developing countries a substantial part of national income and exports depend on the exploitation of natural resources: land, water, forests and mineral resources. The depth and scale of adverse impacts on the ability of developing countries to adopt sustainable development patterns varies from country to country, with the dependence on export income and the nature of products. However, attention should be given to the sectors of agriculture, forestry and fisheries, which constitute the main source of livelihood of many developing countries.

The link between natural resource dependence and income is illustrated by the following table (most data from 1988):

	Low Income Countries	**Middle Income Countries**	**High Income Countries**
GNP per capita, USD	320	1,930	17,080
Agriculture as % of GDP	33	12	4
Employment in agriculture as % of total employment	65	60	13
Exports of primary commodities as % of total exports	48	42	21

Many of the poorest countries depend heavily on natural resources for employment and economic growth, frequently this dependence is extreme: in Tanzania agriculture contributes 66 percent of GDP, Nepal has 93 per cent of its labour force in agriculture, Uganda derives 96 per cent of its export

revenue from coffee, 95 per cent of Zambia's exports is copper ore. Typically the poor countries supply primary commodities for processing in middle or high income countries.

Trade policies that widen the options available for the efficient and sustainable use of these natural resources could result both in the better use of these resources and in higher incomes for producers. The major problems confronting developing countries in this area have more often been problems of market access and tariff structures that discriminate against exports of these resources in more processed forms.

With regard to market access, the principal area of concern has related to agricultural commodities, a matter which is under discussion in the Uruguay Round of Trade Negotiations. Agricultural protectionism in developed countries, whose effects on their own environment are debated, and their subsidized exports of agricultural commodities contribute to lowering prices of agricultural commodities traded by developing countries, thus constraining the ability to exploit these resources in a sustainable manner, and placing these productive sectors under heavy strain.

In the broader field of commodities in general the major difficulty of the developing countries has been the sharp fluctuations in prices leading to great instability in export earnings. This question has been under discussion for a long time and an Integrated Programme for Commodities, with a focus on stabilization of earnings has been discussed within the framework of UNCTAD. But the degree of progress achieved in terms of specific agreements is still very limited. Certain commodity agreements like those for tropical timber and jute include explicit treatment of the concept of sustainability. However, the sustainable exploitation of commodities requires greater stability and predictability of earnings both at the level of the individual producer and the country. These earnings also need to grow without requiring unsustainable resource use for this purpose. However, the dealing in the commodity prices (dealt with later in this paper) and the instability of commodity earnings have eroded the ability of many countries to pursue not just sustainability but any form of development.

In the field of manufactures the major area of concern for developing countries has been market access particularly for items of a labour intensive nature. From the point of view of sustainability market access for manufactures is of relevance as exports of labour intensive manufactures offers a very useful avenue of diversification for many countries which are dependent on the exploitation of the natural resource base. Such diversification would reduce the pressures for excessive exploitation of resources beyond the point of sustainability.

The issues mentioned above are at present under discussion in various international fora including the GATT and UNCTAD. The Preparatory Committee may wish to indicate its views on how trade liberalization and trade expansion can be oriented to widen options for sustainable development and international arrangements for trade in agricultural and other commodities.

Trade restraint on environmental grounds

GATT has been conceived basically as an instrument to liberalize world trade on the general presumption that liberalization is desirable from the point of view of economic welfare. However, the General Agreement includes certain provisions which allow in exceptional circumstances departures from trade liberalization. Article XX of the GATT provides an exception from GATT rules for measures necessary to protect human, animal and plant life or health or for the conservation of natural resources in conjunction with restrictions on domestic production or consumption, provided such measures do not establish a means of unjustifiable or arbitrary discrimination between countries or to disguise restriction on trade. Article XI likewise permits restrictions on imports of agricultural or fisheries products provided production or marketing of the like domestic product is also restricted. A number of measures relating to action taken on these grounds have been addressed under the GATT Dispute Settlement Procedure.

In 1971 the GATT contracting parties set up a group with terms of reference which provide for an examination of specific matters relating to the trade policy aspect of measures to protect the human environment especially with regard to the application of the provisions of the general agreement. However, this group has so far not met.

The interaction between trade and environment does not figure as a separate negotiating issue in the Uruguay Round Negotiations except for certain exemption from obligations arising from the discussion on services and subsidies. An area which does figure in current discussions is the export of domestically prohibited goods. Certain other discussions on sanitary and phyto-sanitary methods have some environmental implications.

A proposal for a study on the relationship between environmental policies and the rules of the multilateral trading system and for the reactivation of the GATT group referred to earlier has been put forward by the EFTA group of countries. This has been discussed most recently in a GATT Council meeting at the end of May 1991.

It is clear that standards for the national environment will be set by the country concerned. Since economic, social and environmental conditions differ greatly between countries, it is very likely that the standards would also differ. Another issue that has arisen in the context of environmental standards is that differences in such standards between countries has an impact on international competitiveness. One question is whether environmental standards should differ between countries. The generally accepted proposition is that they can. If that is the case, then differences in standards per se cannot be a basis for valid trade restraint. In fact, from the point of view of sustainability it would be desirable that differences of environmental conditions are allowed to affect competativity so that international specialization is efficient also from an environmental point of view.

As stated earlier, the right of both developed and developing countries to apply trade measures for the protection of human, animal or plant life or

health and the conservation of exhaustible natural resources is recognized under GATT. The agreement on technical barriers to trade negotiated in the Tokyo Round also allows the environment as a basis for technical regulations but imposes certain obligations like non-discrimination, non-arbitrariness, least trade restrictiveness, etc. The imposition of technical regulations which restrict trade on environmental grounds in a manner that is consistent with these provisions of GATT and the Tokyo Round Agreement of Technical Barriers is not a matter of serious dispute when such technical regulations are directed at protecting the national environment of the country setting them.

One issue that relates to the application of such technical regulations is whether they could apply to products or also to processes. From the point of view of the country receiving the product, a harmful impact on its environment could arise in most cases only from the nature of the product itself rather than how it is manufactured. In certain exceptional cases the country may be affected by the manner in which the product is produced. For example, if a product is produced using CFC's then, in a sense, the importing country shares in the environmental problem caused by the process of production.

Environmental standards are clearly technical in nature. In cases where such standards have to be formulated on an international basis, the appropriate negotiations would generally take place in some technical forum. Such technical agreements often include provisions mandating trade restraint. Some examples of such agreements in recent years include:

- the Montreal Protocol on Ozone Depleting Substances;
- the Basel Convention on the Transboundary Movement of Hazardous Waste;
- Convention on International Trade in Endangered Species;

Environmental principles can be integrated into commodity agreements and this has been done in the International Tropical Timber Agreement as also the International Agreement on Jute and Jute Products. An important issue is the consistency of the trade restraint measures included in such environmental agreements with the General Agreement on Trade and Tariffs. A related issue is the appropriate forum for the resolution of trade related disputes arising from the application of such global agreements.

Some of these global agreements include provision for trade restraint measures against non-parties. This is in part an effort to take care of what is described as the "Free Rider" problem. This is the case where an agreement seeks to tackle a global problem and where a country could refuse to join the agreement and yet benefit from the actions taken by the parties to the agreement. The consistency of such provisions with obligations under GATT is at issue. It is however, generally accepted that trade measures must be proportional to the environmental objectives which are sought to be achieved.

In recent years trade restraint measures or technical regulations imposed on environmental grounds have often been imposed unilaterally rather than on the basis of a prior international agreement on norms or standards. In many cases the restraint relates to the impact of a product on a domestic environment. However, there are certain cases where the restraint has been imposed on grounds which relate not to the national environment but to the transnational environment in the form of the global commons or the national environment of another country. The GATT agreement does not allow explicitly contracting parties to take action to influence conditions within another contracting parties' territory or that parties policies outside the trade field.

The Preparatory Committee may wish to address three broad classes of questions with regard to the issue of trade restraint on environmental grounds:

- the first relates to environmental standards and whether they can differ between countries and what is the extent and nature of harmonization which is required;

- the second relates to the appropriate forum for the setting of such standards and the forum where trade disputes arising from the application of the standards is best resolved;

- the third is whether the standards can relate not just to the national environment of the standard setting country but to transnational considerations relating to the global commons or even to the environmental conditions in the partner country.

IV. DETERIORATION OF TERMS OF TRADE

A deterioration of terms of trade occurs when, over time, the income earned from a certain volume of exports can buy less imports. Commodity prices declined persistently in the 1980's . Between 1980 and 1988, the real prices of non-fuel commodities from developing countries declined by 40 per cent. Fuel prices declined by 50 per cent in the same period. After a short-lived recovery in 1988, the average price index of commodities renewed it decline in 1989.

The impact of these price movements on country groupings and individual countries varied according to the composition of their exports. Commodity-dependent countries lost ground, while countries with more diversified exports and a high share of manufacture exports faced neutral or, in some cases, improving terms of trade. But the fact is that, on the whole, developing countries were adversely affected by changes in terms of trade. Terms-of-trade losses of one country are the gain of another. Industrial countries benefited from the changes in terms of trade in the 1980s.

The magnitude of the impact of unfavourable terms of trade is shown in table 1 and 2 for two groups of countries: at the end of the decade, it is 8 to 9 per cent of GDP for sub-saharan african countries, and between 5 and 6 per cent of GDP in a sample of middle income highly-indebted countries.

Table 1. Sub-Saharan Africa: a/ Combined effects of terms of trade changes and net financial transfers

(Billions of dollars and percentage of GDP)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989 b/
Net financial transfer	1.3	14.5	13.4	8.9	0.8	-1.0	3.9	3.3	5.5	4.0
(GDP 1985: $175 billion) Share in 1985 GDP	0.7	1.8	1.7	1.1	0.1	-0.1	0.5	0.4	0.7	0.5
Terms of trade (1980 = 100) (Value of exports in 1980: $57 billion)	100	95	93	94	100	99	82	74	74	72
Gains (losses) from trade		-2.9	-4.0	-3.4	0.0	-0.6	-10.3	-14.8	-14.8	-16.0
Shares in 1985 GDP		-1.6	-2.3	-2.0	0.0	-0.3	-5.9	-8.5	-8.5	-9.1
Impact on total domestic resource availability		11.7	9.4	5.5	0.8	-1.6	-6.4	-11.5	-9.3	-12.0
Share in 1985 GDP		6.7	5.4	3.1	0.5	-0.9	-3.6	-6.6	-5.3	-6.8

Source: United Nations Department of International Economic and Social Affairs, based on data of the IMF, the World Bank and the United Nations Statistical Office.

a/ Including Nigeria.

b/ Preliminary estimate.

Table 2. Middle-income highly indebted countries: a/ Combined effects of terms of terms of trade changes and net financial transfers.

(Billions of dollars and percentage of GDP)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989 b/
Net financial transfer	8.7	20.5	9.3	-23.8	-40.4	-40.9	-22.8	-28.7	-31.7	-35.0
(GDP 1985: $801 billion)										
Share in 1985 GDP	1.1	2.6	1.2	-3.0	-5.0	-5.1	-2.8	-3.6	-4.0	-4.4
Terms of trade (1980 = 100)	100	97	90	86	90	85	73	73	71	72
(Value of exports in 1980: $161 billion)										
Gains (losses) from trade		-4.8	-16.1	-22.5	-16.1	-24.2	-43.5	-43.5	-46.7	-45.1
Share in 1985 GDP		-0.6	-2.0	-2.8	-2.0	-3.0	-5.4	-5.4	-5.8	-5.6
Impact on total domestic resource availability		15.7	-6.8	-46.3	-56.5	-65.1	-66.3	-72.2	-78.4	-80.1
Share in 1985 CDP		2.0	-0.8	-5.8	-7.1	-8.1	-8.3	-9.0	-9.8	-10.0

Source: Department of International Economic and Social Affairs of the United Nations Secretariat, based on data of the IMF, the World Bank and the United Nations Statistical Office.

a/ Argentina, Bolivia, Brazil, Chile, Colombia, Côte d'Ivoire, Ecuador, Mexico, Morocco, Nigeria, Peru, Philippines, Uruguay, Venezuela and Yugoslavia.

b/ Preliminary estimate.

Table 3. Net transfer of financial resources of the capital-importing developing countries, 1980-1989 a/

(Billions of dollars: sample of 96 countries)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989 b/
Transfer through direct investment										
Net investment flow	5.5	9.0	6.4	5.5	5.6	6.3	5.6	8.7	14.1	13
Net dividends and other income	-10.5	-9.9	-9.4	-8.8	-8.0	-7.5	-6.4	-7.0	-7.8	-9
Net transfer	-5.0	-0.9	-3.0	-3.3	-2.5	-1.2	-0.8	1.7	6.3	4
Transfer through private credit										
Medium-term and long-term foreign borrowing										
Net credit flow	35.4	48.3	40.6	26.5	17.8	11.6	7.7	1.4	6.5	6
Interest paid	-24.2	-31.2	-37.2	-35.2	-39.9	-38.9	-34.6	-33.9	-39.2	-42
Net transfer	11.2	17.0	3.4	-8.7	-22.0	-27.3	-27.0	-32.5	-32.8	-36
Short-term borrowing and domestic outflows c/										
Net transfer	0.9	-17.3	-27.2	-18.9	-12.7	-8.6	1.8	3.2	-10.1	7
Transfer through private grants (net)	1.2	1.2	1.2	1.9	2.1	2.5	3.4	3.5	4.2	4
Transfer through official flows										
Official transfers (grants)	11.1	11.7	9.2	10.2	10.7	11.5	11.1	12.3	12.4	12
Net official credits	23.2	28.8	31.6	27.7	25.0	16.5	16.0	12.0	16.0	22
Interest paid	-5.8	-6.8	-8.3	-9.7	-11.3	-12.8	-15.6	-16.9	-18.2	-22
Net transfer	28.6	33.7	32.5	28.2	24.5	15.1	11.5	7.5	10.2	13
Total transfer (financial basis)	36.8	33.8	7.0	-1.2	-10.6	-19.4	-11.1	-16.6	-22.1	-7
Use of official reserves d/	-12.8	2.7	15.9	-8.0	-19.4	1.6	8.7	-14.4	-9.9	-17
Total transfer (expenditure basis)	24.0	36.5	22.9	-9.2	-30.0	-17.8	-2.4	-31.0	-32.0	-24

Source: Department of International Economic and Social Affairs of the United Nations Secretariat, based on data of the International Monetary Fund (IMF), OECD, the World Bank and United Nations Secretariat estimates.

a/ Definitions: direct investment is net of reinvested earnings (cash flow approach); official credits include use of IMF credit, and interest includes Fund charges; private grants include net flow of gifts from overseas residents (excluding workers' remittances) and grants by non-governmental organizations.

b/ Preliminary estimate; rounded to the nearest half-billion dollars.

c/ Calculated as a residual (including short-term trade financing, normal and unusual outflows ("capital flight"), arrears on interest due, and other flows captured in balance-of-payments data as "errors and omissions" and presumed to be financial flows).

d/ Additions to reserves shown as negative numbers.

V. NET FINANCIAL TRANSFER OF RESOURCES FROM DEVELOPING COUNTRIES

This issue is discussed in detail in the report of the Secretary-General submitted to the General Assembly at its forty-fifth session, contained in document A/45/487 as well as in The World Economic Survey 1990 (Document E/1990/55). The main elements are that since 1983, traditionally capital-importing developing countries, all developing countries except eight major oil-exporting countries, have, in aggregate, experienced an outward net financial transfer. The conjunction of factors that led to this outflow can be summarized as follows:

(a) Foreign debt in many developing countries had reached high levels. In the second half of the 1970s, developing countries - in particular the newly industrializing among them - had borrowed easily from commercial banks. In those years, since real interest rates were very low, many countries had opted for "growth-cum-debt" instead of earlier retrenchment and adjustment to a lower level of foreign exchange availability;

(b) Interest rates did rise steeply, over a debt structure in which commercial loans at floating rates represented most of the debt. Starting in 1979, the industrialized countries, led by the United States of America, tightened their monetary policies to fight inflation. This brought unprecedented interest levels, which multiplied suddenly the cost of Third World debt;

(c) Because of deteriorating terms of trade and a lack of ability to increase exports earning with sufficient speed, too many countries could not cope with the rapid rise in debt service. The same policies in OECD countries that brought higher interest rates resulted in the world-wide recession of the early 1980s, which depressed export prices from developing countries and reduced markets for their products;

(d) Finance from private creditors dried up suddenly and could not be compensated for by official credit.

The size of the phenomenon is shown in table 3. At the beginning of the 1980's, capital-importing developing countries were receiving net financial transfers in the order of $30 billion year. In recent years, the same countries have been making net outward transfers of a comparable magnitude.

The combined effects of terms of trade and net financial transfer on total domestic resource availability are shown in the lower rows of tables 1 and 2: in Sub-Saharan Africa, losses from terms of trade more than exceed the positive financial transfers, to account for a loss of over 10 billion dollars of total domestic resource availability at the end of the 1980s, or close to 7 per cent of GDP. For the highly indebted middle-income developing countries sampled in table 2, the combined effects of a high negative transfer and terms of trade losses amount to an impact on total domestic resource availability, amounting to US$80 billion or some 10 per cent of GDP.

The realization of the serious consequences of adverse economic factors such as deteriorating terms of trade and negative financial transfers on development and the environment should provide an increased incentive for effectively seeking to correct them. From the view point of sustainable development the measures required for dealing with this are not any different from measures which have been advocated in an essentially economic context. Recommendations made in this regard on previous occasion may therefore be given new consideration.

- Annex 1 reproduces the policy implication contained in the report of the Secretary-General on the net transfer of resources from developing countries.

- Annex 2 reproduces the conclusions contained in the report prepared by the Personal Representative on Debt appointed by the Secretary-General.

Both reports were submitted to the General Assembly at its forty-fifth session.

VI. ADJUSTMENT AND ITS IMPACT ON SUSTAINABLE DEVELOPMENT

Negative net financial transfers are indicative of the amounts that need to be mobilized by an economy and transferred abroad rather than utilized domestically. Deteriorating terms of trade impair the ability of countries that experience them to mobilize the needed resources through exports, or require a greater volume of exports for the same income. In magnitudes as large as those mentioned above, these losses represent a major haemorrhage defeating efforts of developing countries to mobilize and accumulate resources for investment. Figures 1 and 2 illustrate the fall in investment observed in Sub-saharan Africa and in a sample of highly indebted developing countries during the 1980s.

Adjustment programmes recommended by international financial institutions typically consist of short term programmes, which often include reductions in public-sector spending, attempt to increase tax revenues and exchange rate devaluations. In addition, medium to long-term measures are recommended, which often include foreign trade liberalization, removal of price controls and subsidies, financial sector reforms, land reforms etc... Such measures do not all affect sustainable development in the same manner. Some may have positive consequences. Many others have adverse impacts.

In general, the response to situations of financial stringency is likely to involve predominantly policies aiming at generating cash flow immediately and at meeting pressing current needs even if it compromises the future. Such orientation is clearly incompatible with the concern, fundamental to sustainable development of preserving the ability to produce in the future.

The impact of such financial stringency situations on sustainable development takes place mainly through the following processes:

a) Pressure to rapidly increase export volume and income. This may lead to unsustainable exploitation of otherwise renewable natural resources, cultivation of export crops on marginal lands and accelerated depletion of non-renewable resources.

b) Cuts in investments in such areas as infrastructures, equipments, maintenance, lead to a deterioration of productivity, which translates into higher natural resource use for given results. Cuts in investments for natural resource conservation have an obvious negative impact.

c) Deteriorating employment situation due to cuts in investment and cuts in resources allocated to social services are likely to lead to an increase in poverty. Increased poverty translates into environmental degradation through processes reviewed in the report as poverty and environmental degradation: contained in document A/CONF.151/PC/47.

The possibility of adverse environmental consequences should not lead to renouncing correction of major imbalances in the economy. However, measures decided in this regard should be assessed on the basis of their impact on sustainable development, so that current economic stabilization is not achieved at the cost of future ability to produce. The Preparatory Committee may wish to consider how these adverse impacts could be mitigated.

ANNEX 1

Policy Implications Contained In the Report of the Secretary-General On the Net Transfer of Resources from Developing Countries (A/45/487)

The prolonged and large outward transfers of resources and its association to low or negative growth has been a feature of the 1980s. Investment has particularly suffered in indebted countries. The debt crisis and the pattern of financial flows it engendered continue to be the major obstacle to recovery and development in most indebted countries, particularly in Latin America and in Africa. It has also had adverse repercussions on the exports of many industrial countries. 23/ The internal resource mobilization that the outward transfer implies and the actual policy response to the need of such mobilization was a main factor in the budget crisis of several developing countries. Throughout the 1980s the severity of the adjustment to the shift in financial flows has been compounded by adverse changes in terms of trade. In assessing these trends, the international community has recognized that, during the 1980s, the large net transfer of resources to the developed countries has deprived developing countries of much needed resources for development. 24/

The prospects for the 1990s under unchanged policies are bleak for developing economies. Projections of international organizations indicate very little per capita growth in Latin America and the Caribbean and virtual stagnation in Africa. While the international economic environment should be less adverse than that of the 1980s, or might even be favourable, a large number of developing countries are beginning the new decade in a much weaker economic position. A global recession as in the early 1980s, or the prolonged and substantial fall of commodity prices of the last decade, will not necessarily occur in the 1990s. Yet, the starting point for most debtor developing countries is one of depressed investment, deteriorated physical infrastructure and serious balance-of-payments difficulties. Such conditions were not pervasive at the beginning of the 1980s. Massive national and international efforts are required to change these conditions and to revitalize growth and development.

Given the diversity of factors determining the sharp fall in net financial transfers to many developing countries, and given the differences in the ability of countries to cope with these changes, a mix of policy measures in various areas is required. For many countries, the mix will have to include further fiscal adjustment and measures towards export diversification, combined with efforts to create a climate of confidence to increase domestic savings and productive investment, including foreign direct investment and return of flight capital. This is a tall order. For the domestic adjustment to be orderly and at all feasible not only from an economic, but from a socio-political standpoint, the shift in the resource transfer should not be abrupt. This implies restoring a higher degree of stability to the flows of international finance and reducing world interest rates.

There are, so to speak, two sides of the coin in this issue of the abrupt changes in net transfers: one is the financial implications: the other is the ability to cope with such changes via increased export earnings. Stability in commodity prices and elimination of protectionism against products from developing countries would reduce these countries' need for compensatory finance. Improved access to the markets of industrial countries in areas of interest to developing countries such as textiles and clothing, tropical products and agriculture as well as the elimination of tariff escalation in developed countries - which is an obstacle to the export diversification of developing countries - are some of the trade measures called for. Anti-dumping measures should not be used as just one more protectionist tool. Beyond a successful completion of the Uruguay Round of multilateral trade negotiations, structural adjustment will be necessary in industrial countries to enable them to reduce protectionism and make room for competitive manufactures from developing countries. And, not least, policy co-ordination at the international level in order to achieve, in the 1990s, vigorous non-inflationary growth. Such policy co-ordination will have to walk the tightrope between supporting economic growth and avoiding that the new demands on world savings drive up world interest rates.

Notwithstanding the essential character of other interrelated measures, the main contribution to a reduction of the excessive outward transfer of resources from developing to developed countries would come from a concerted public solution to the debt problem. The Brady plan, initially proposed by the former United States Secretary of the Treasury, Nicholas Brady, has the ingredients of a public solution to the debt problem. It recognized that voluntary lending would not start any time soon and that the debt could not be repaid in the original conditions. In an important departure from the previous strategy, the Brady initiative endorsed the commitment of public finance to support debt reduction. The Brady plan created high expectations on the possibility of debt reduction regarding commercial debt, and thus debt-service reduction and diminution of the net negative transfer. It has made some progress in that direction. After very complex and prolonged negotiations, debt and debt-service reduction was obtained in Costa Rica, Mexico, the Philippines and Venezuela. Nevertheless, only a very partial reduction of the debt overhang was achieved.

The unabated increase in the number of reschedulings and in arrears indicates the persistence of the problem. Limited debt reduction, with only a small impact on the debt overhang and on the net negative financial transfer, cannot bring about what is aimed at in the first place, namely, to allow an increase in investments and imports, and in growth. The Brady plan has to be extended rapidly to a larger number of developing countries. Adequate debt reduction is necessary to restore development. There are some 40-odd countries waiting to be eligible for the Brady plan, and various studies have concluded that, on the aggregate, a minimum between one third and 45 per cent is necessary to have an impact on investment and growth. On that account, the Brady plan suffers from under-funding, as evidenced also by the shortage of official collateral funds in the last debt reduction agreements.

Also, the present accounting, tax and regulatory environment in which banks operate calls for examination. Lack of clarity and differences in

national bank law make the negotiations extremely complex and make it difficult to devise a reduction scheme in which all concerned bear their fair share of the cost of debt reduction. To close the unfinished business of the era of concerted lending and move to the concerted acceptance of loss, the case-by-case approach to debt reduction has to be complemented by concerted rules of cost sharing. While at the domestic level countries need to arrive at social consensus on how the burdens and fruits of unavoidable adjustment are to be shared, the international community, to speed up the restoration of adequate flows of finance for development, also badly needs some common rules and agreements on cost-sharing amongst the numerous partners involved.

The Brady plan addressed commercial debt only. It is now recognized that official debt, including to the international financial institutions, will have to be part of a solution. Debt relief for most least developed and other low-income developing countries, particularly in Africa, remains critical. Debt forgiveness form bilateral creditors is particularly important for those among such countries that face serious debt-servicing difficulties.

Following the Toronto Summit decisions, several low-income countries have benefited in the last two years from easier terms and partial write-offs in the reschedulings of official bilateral debt within the framework of the Paris Club. Regarding low-income countries, an increasing number of donor countries have converted official development assistance (ODA) loans into grants, in line with the United Nations Conference on Trade and Development's Trade and Development Board resolution 165 (S-IX). The Enterprise for the Americas Initiative announced on 27 June this year by President Bush, when proposing to reduce the region's official debt to the United States, implicitly recognized the need to extend beyond the poorest countries the Paris Club eligibility criteria for easing the terms of rescheduling and for reducing official bilateral debt. Still regarding official flows, a positive development is the willingness of IMF and the World Bank to make disbursements while a country has not yet finished negotiations with the banks and even if a country has arrears to the banks.

Net official development finance - grants plus net official credits - was virtually at the same level in 1989 as in 1980. The recovery of investment in Africa and Latin America and the consolidation of the vigorous capital accumulation in Asia of recent years will require a substantial increase in net official flows to support internal savings mobilization efforts. In the case of least developed countries and other low-income countries, mostly in Africa, ODA is particularly important to narrow the gap in foreign exchange and savings required to resume growth and increase investments. In other developing countries, official flows remain critical during this period of foreign exchange stringency. The imported component of investments in machinery and equipment tends to be quite high in middle-income developing countries and such investments are a sine qua non for the transformation of productive structures and to increase export potential. It is only after growth has been restored and exports have achieved a certain momentum that private capital - foreign direct investment and commercial bank flows - are likely to again play a significant role in the development process.

ANNEX 2

CONCLUSIONS CONTAINED IN THE REPORT OF THE PERSONAL REPRESENTATIVE ON DEBT OF THE SECRETARY - GENERAL (A/45/380)

(a) The problem of extricating countries and regions with heavy debt burdens from the debt crisis is of a systemic nature and requires the participation of all creditors, not only banks but also Governments and multilateral institutions;

(b) The Brady Plan 2/ should be strengthened and provided with more resources and co-ordinated management from an agency within the international financial institutions, working closely with the regional banks;

(c) Following the decisions of the group of seven major industrialized countries at their Toronto and Paris summits it should be possible to obtain further debt relief as needed, differentiated according to level of development and indebtedness of the various types of debtors. Such alleviation should be achieved through long-term debt rescheduling (40 or 30 years) and greater concessionality on debt service in a measure reflecting the various categories of debtors;

(d) Debt-service should be fully written off only in the case of the poorest countries (the IDA-only group), and only for soft loans under official bilateral assistance programmes;

(e) It should be made possible for countries to pay interest on bilateral debts into trust funds in indexed local currencies, to be used for the financing of development projects for environmental protection and human resources development;

(f) An "intermediate" group of debtor countries, between the poorest and the middle-income countries, should be defined with the view to increasing the degree of concessionality of their debt, applying, as a first measure, the Toronto terms to their rescheduling at reduced interest rates;

(g) There should be a commitment to guarantee an adequate flow of public and private funds to developing countries. The report restates the goal of providing 0.7 per cent of gross domestic product (GDP) as official development assistance: that target was reconfirmed by the Ministerial Council of the Development Assistance Committee (DAC) of the Organization for Economic Co-operation and Development (OECD) at its ministerial meeting on 14 May 1990;

(h) The case-by-case approach should be maintained. However, a clear distinction should be made between different categories of debt, such as debt arising from concessional aid loans, publicly guaranteed debt, non-guaranteed private debts, and debts to international financial institutions. In this context, the status of those institutions as privileged creditors is important both as a support to their concessional lending and as a framework for overall financial stability;

(i) Developing debtor countries and Eastern European countries should adopt cohesive policies of domestic adjustment in collaboration with the international financial institutions. However, adjustment programmes must be selective and growth-oriented. In addition, they should take into account the needs of the less favoured groups of the population;

(j) Private banks should be encouraged, by means of appropriate incentives and co-ordination, to reduce the interest on private debts. Tax and accounting regulations should be revised to favour those creditor banks which reduce interest and provide new financial flows to developing countries;

(k) Consideration should also be given to an increase of the resources of the international financial institutions to be used to finance operations under the Brady Plan and to an SDR (special drawing right) allocation to be used to enlarge the funds available for debt reduction, interest subsidy and bridging loans;

(l) In those indebted countries endowed with a wide range of industrial assets or natural resources, incentives should be provided for "swap" operations that would set up joint ventures and promote the participation of external capital in privatized public enterprises. Commodity bonds should be given public guarantees. Innovative approaches should be considered, such as the payment of part of debt service in bonds expressed in local currency and indexed on export commodities, with the option of using them to purchase shares and other marketable securities;

(m) A special effort must be made to provide financial backing to the countries of Eastern Europe during their transition to a market economy in order to avert serious social shocks. In debt relief, consideration should be given to innovative financing options and the conversion of debt into shares of privatized companies.

It may be estimated that the additional burden on the government budgets of creditor countries of the concessions on bilateral debt would not exceed 0.1 per cent of GDP. This would mean an increase in their aid budgets from 0.35 to 0.45 per cent of GDP.

Special attention should be given to the extension of the system of regional banks. After the recent establishment of the European Bank for Reconstruction and Development, consideration should be given to the establishment of a bank for the Mediterranean region to provide financial flows for enhancing the resources of relevant countries and also to meet the acute problems of population growth and migration.

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Preparations for the United Nations Conference on Environment and Development on the basis of General Assembly resolution 44/228 and taking into account other relevant General Assembly resolution:
Recent actions of intergovernmental and other bodies of relevance to the preparatory process

Environment and International Trade

Report of the Secretary-General of UNCTAD submitted to the Secretary-General of the Conference pursuant to General Assembly resolution 45/210

The General Assembly in its resolution 45/210 requested the Secretary-General of the United Nations Conference on Trade and Development to prepare an analytical study on the relation between environmental issues and international trade to be submitted to the Preparatory Committee for the United Nations Conference on Environment and Development at its third session. The report of the Secretary-General of UNCTAD is placed below:

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United Nations Conference on Trade and Development

Environment and International Trade

Report by the Secretary-General of UNCTAD

Contents

		Paragraph
	Introduction	1-8
I.	Environment and North-South trade	9-77
	Introduction	9-15
	A. Environmental aspects of Third World trade	16-27
	B. Future developments in environmental policies and possible impacts on products	28-48
	(1) Proliferation of product regulations	31-33
	(2) Impacts on product technology	34-38
	(3) Possible impacts on exports from developing countries	39-48
	C. Impacts on the location and technology of production	49-60
	(1) Relocation of industries	52-54
	(2) Facilitating technology adjustment	55-60
	D. Trade policy for sustainable development	61-73
	Conclusion	74-77
II.	UNCTAD's Trade Control Measures Information System	78-102
	Introduction	78-79
	A. The Trade Control Measures Information System	80-81
	B. Organization of the data base	82
	C. Use of the data base	83
	D. Trade measures included in the data base	84
	E. Dissemination	85
	F. Recent developments	86-87
	G. Trade measures having a bearing on the environment	88-90
	H. Tariff Measures (TMs)	91
	I. Non-Tariff Measures (NTMs)	92-94

(1) Product standards 92-93

(2) Internal taxes 94

J. Unilateral import restrictions, such as prohibition and charges 95-97

(1) GATT Article XX (Exceptions) 95

(2) Other import bans and charges 97

K. International environmental agreements 98-100

L. Some methodological problems 101-102

(1) Product coverage 101

(2) Export measures 102

Conclusions 103-109

A. Collection of information 105

B. Definitions 106

C. Analytical instruments 107

D. The data base coding system 108

E. Requirements for substantive and financial inputs 109

Annex

Introduction

1. The General Assembly, in its resolution 45/210, requested the Secretary-General of the United Nations Conference on Trade and Development (UNCTAD) to prepare an analytical study of the relation between environmental issues and international trade, to be submitted to the Preparatory Committee for the United Nations Conference on Environment and Development at its third session. Apart from considering trade and environment in the light of UNCTAD's ongoing work on the subject, according to the resolution the study should also deal explicitly with monitoring non-tariff measures which have a bearing on the environment, in particular by means of UNCTAD's Trade Control Measures Information System. This report devotes a chapter to each of these two questions.

2. At the invitation of the Government of Norway, UNCTAD convened an informal seminar on International Trade and the Environment in Oslo from 28 February to 1 March 1991. A background paper for the seminar was prepared by a consultant, Jan Suurland, to serve as a basis for the discussions. Chapter I of this report draws on that paper. The conclusions of the seminar[1] as well as other aspects of UNCTAD's ongoing work are also reflected.

3. The right of both developed and developing countries to apply trade measures for protection of "human, animal or plant life or health" and "conservation of exhaustable natural resources", is recognized under the General Agreement on Tariffs and Trade (GATT). Contracting parties to GATT are allowed to take measures otherwise inconsistent with the general obligations (e.g. unconditional most-favoured-nation treatment, national treatment, prohibition of quantitative restrictions and tariff bindings) for specific purposes listed in Article XX in a very strict sense as exceptions. The Agreement on Technical Barriers to Trade (TBT) negotiated during the Tokyo Round with the objectives of ensuring that the technical regulations and standards do not act as unnecessary barriers to trade, specifically refers to the environment as an objective for technical regulations. This Agreement attempts to ensure that these standards and technical regulations are carefully restricted by obligations such as non-discrimination, the need to avoid arbitrariness, reliance on international norms and the use of the test of least trade restrictiveness, as safeguards against abuse. Under these rules, and as a result of decisions taken under GATT's dispute settlement mechanism, specific case law has been developed that offers some guidance as to how to distinguish between genuine environmental measures and protectionist measures.

4. In recent years, many trade measures have been imposed unilaterally for environmental purposes in the implementation of national standards and regulations. A major concern is that these regulations should not be allowed to add to the arsenal of devices already used to restrain or harass trade, particularly that of developing countries. This concern has been highlighted by the recent debate in the United States Congress between supporters and opponents of the fast-track extension in relation to the North American Free Trade Agreement negotiations and the draft International Pollution Deterrence Act of 1991 regarding countervailing actions; in both cases there was a tendency for environmental objectives to become intertwined or allied with protectionist interests.

5. Although some attempts have been made recently to raise in the GATT issues such as the environmental impact of trade policies, including as regards the items on the Uruguay Round agenda, so far the GATT has only been concerned with the implications for it of trade measures taken for environmental purposes as noted above.

6. UNCTAD, as an organ of the General Assembly, was established with, *inter alia*,the following objectives: to promote international trade, especially with a view to accelerating economic development; to formulate principles and policies on international trade and related problems of economic development; to review and facilitate the co-ordination of activities of other institutions within the United Nations system in the field of international trade and related problems of economic development; and to be available as a centre for harmonizing the trade and related development policies of Governments and regional economic groupings in pursuance of Article 1 of the United Nations Charter. UNCTAD would thus seem to constitute an appropriate forum in which to discuss issues such as the environmental impact of trade and development policies as well as the implications for development of trade measures taken for environmental purposes. Hence the role of UNCTAD in the area of trade, development policies and environment could be:

(a) to identify measures taken on environmental grounds that have an adverse impact on trade, or which more generally impede the efforts of Governments to implement policies designed to achieve sustainable development;

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[1] The report is entitled *Informal Encounter on International Trade and the Environment* (UNCTAD VIII/2).

(b) to collect information on the interaction of the environment, regulations, trade and the performance of domestic economies.

(c) to analyse criteria that could be used to determine whether trade measures are justified and necessary;

(d) to assist developing countries in overcoming any adverse effects of these measures;

(e) to work towards a general consensus on issues arising in the interface of environmental and trade policies which would be useful for Governments, international organizations and the private sector in adopting a common approach to such issues;

(f) to alleviate environmental degradation by reducing poverty and improving the livelihood of the people in the developing countries, while ensuring that environmental concerns do not introduce new forms of conditionality into development finance and trade policies;

(g) to encourage and assist developing countries to pursue sound management of their environment while recognizing their permanent sovereignty over the use and management of resources within their own territories, and the right to develop them in accordance with their needs and levels of socio-economic development;

(h) to make policy recommendations with a view to enabling the developing countries to improve their market access for resource-based products, to increase their export earnings, to reduce over-exploitation and the associated export of natural resources and raw materials, to overcome obstacles to sustainable development, and to cope with environmental degradation.

7. The relations between environmental considerations and international trade are only beginning to be studied. They are numerous and complex; generalizations need to be carefully tested against the multifarious reality of particular cases. That is one of the conclusions of Chapter I. Another finding, also related, is that both international trade theory and its practice in the spirit of GATT as well as the growing consensus - at least among developed countries - on economic policy for the environment, recognize that it is valuable for the prosperity of the world economy as a whole to take full account of differences in environmental conditions just as they take into account differences in endowments of other factors of production.

8. With regard to UNCTAD's ongoing work, General Assembly resolution 45/210 refers specifically to the paper which the UNCTAD secretariat is to present to the Trade and Development Board in response to Board decision 384(XXXVII). That paper is concerned with the issue of sustainable development, in particular the reduction of poverty and its interface with policies and mechanisms in environmentally sensitive sectors. It will therefore cast further light on the issues discussed here.

Chapter I

Environment and North-South Trade

Introduction

9. Within the context of sustainable development, the international community will have to place greater emphasis on economic growth in harmony with the environment. While trade is a major determinant of the level and distribution of economic growth, there is increasing awareness that sustainable development involves the reconciliation of environmental and trade objectives as part of broader efforts to integrate environmental and economic policies.

10. This chapter concentrates on these policy questions. It is clear that the policies actually pursued will affect the structure and even the volume of international trade. The solution of many environmental problems may involve further reductions in the material content of goods or substitution of inputs which are particularly damaging to the environment by others which are more benign. The composition of international trade will be influenced by environmental policies, the demand for some goods rising as a result of declining interest in others. International trade in chlorofluorocarbons (CFCs) or asbestos, for instance, can be expected to fall, while new prospects may open up for environment-friendly products, such as certain vegetable fibres. A study of some aspects of this question is underway within the UNCTAD secretariat. Geographical patterns of trade will also be affected as a result not only of shifts in demand from some goods to others, but also of changing transport costs in response to environmental policies.

11. This chapter focuses on policies insofar as they affect trade in goods. There is no doubt that trade in services may also have environmental effects, just as environmental concerns have an impact on trade in services. Tourism has a significant effect on the environment and is in turn influenced by it. Environmental issues are undoubtedly going to affect the development of this sector which is essential to the economies of several developing countries. Transport is an input into virtually every sector of the economy. Energy policies inspired by the concern for sustainable development will certainly affect this key sector.[2] These relationships, which may be of great importance to developing countries growth, are only beginning to be systematically studied. The specific analysis they deserve goes beyond the scope of this report.

12. Transboundary movements of toxic waste will not be covered here. Movements of such material between developed and developing countries are the subject of the Basel Convention on the Control of Transboundary Movements and Hazardous Wastes and their Disposal, adopted in 1989, and the Bamako Convention on the ban of the import into Africa and the control of transboundary movement of hazardous wastes within Africa, adopted in January 1991, which is intended to be even more stringent. However, the Basel Convention has been ratified by only 10 States while a minimum of 20 is needed for it to take effect. The danger of exports of toxic wastes from developed to developing countries, whether legal or not, remains real.

13. World trade is strongly dominated by the industrialized countries, in particular the developed market economies (DMEC) belonging to the Organization for Economic Cooperation and Development (OECD). The share of DMEC countries in total world trade (recorded imports plus exports of goods) amounted to US$ 4,250 billion in 1989 of a world total value of US$ 6,000 billion. Therefore, it is clear that the task of adjusting economic growth and international trade to global sustainable development lies very much with the developed world. However, this certainly does not diminish the significance of trade-related environmental issues for the developing world, nor does it imply that the establishment of sustainable environmental conditions is a matter of less concern to developing countries. On the contrary, many developing countries are already confronted with major public health problems owing to inadequate pollution control as well as an ongoing degradation of their natural resource base that is undermining their capabilities to ensure food security and to maintain their income-earning capacity. As has been amply demonstrated by the World Commission on Environment and Development, unless and until developing countries succeed in improving current domestic practices of environmental and natural resource management, their economies will be increasingly vulnerable to environmental hazards.[3]

14. The achievement of environmentally sound development patterns within developing countries, as in the developed ones, is to a large extent dependent on the establishment of an appropriate incentive structure aimed at the effective integration of environmental and sectoral policies and the internalization of environmental costs into product prices. The ability of developing countries to integrate policies and internalize such costs will be strongly influenced by the conditions under which they are able to market their exports. Insofar as they are price takers, environmental costs can only be covered to the extent that buyers are willing to accept these costs. Furthermore, the marked decline of commodity prices during the 1980s and more generally the worsening of the developing countries' terms of trade have reduced what little scope they may earlier have had for meeting environmental costs out of export revenue (see table 1). The relations

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[2] Some of these transport issues will be discussed in the paper which the UNCTAD secretariat is to present to a future session of the Trade and Development Board, in response to Board decision 384(XXXVII), para. 5.

[3] World Commission on Environment and Development, *Our Common Future*, Oxford 1987.

between export earnings and the environment in both exporting and importing countries is complex and depends on the particular commodities and countries concerned. These questions call for further study. In any event, it is clear that the appropriate integration of environmental concerns into North-South trade relations is a major prerequisite to environmentally sound economic development.

15. This chapter is organized as follows. Section A sketches the major interaction between trade and environmental conditions in developing countries. Section B deals with new developments in environmental policies, particularly in the developed market economies, and their possible impacts on product trade. Section C discusses the question of whether different levels of environmental stress and environmental control may induce shifts in production from North to South. It also addresses the issue of access by developing countries to environmentally sound technologies. The final section discusses the influence of trade liberalization on natural-resource management in developing countries and the possible use of trade instruments for environmental purposes.

A. Environmental aspects of Third World trade

16. The interactions between trade and the environment are manifold and complex, and they vary greatly among countries. Differences in the overall level of economic development, the economic structure, the size of the domestic market, the dependence on primary production and foreign exchange all have different implications for the domestic environments in developing countries. Also, there are large differences among countries and regions in the Third World with regard to climatic conditions, the stock and quality of renewable and non-renewable resources, population densities and the existing levels of pollution and natural resource exploitation. Therefore, it is clear that any broad assessment of the interaction between trade and environment in the Third World has quite different implications for individual countries. However, it is beyond the limits of this paper to discuss variations among countries in any detail. Therefore, the treatment will consist of a broad assessment that can be interpreted as being indicative for trade and environment concerns shared by those developing countries which rely heavily on the production and export of primary commodities and which belong to the lower and middle income categories.

17. This paper discusses the relations between sustainable development and trade policies. The extent to which it touches on sectoral issues is incidental to its main focus.[4] The following paragraphs nonetheless sketch some of the more important relations between commodity exports, trade policy and sustainable development, not only because of the importance of these exports to developing countries, but also as an illustration of the types of problem which trade policy needs to address.

18. Many developing countries are still highly dependent on the export of primary commodities other than petroleum as a source of foreign revenue. In 1987, dependence on these exports was on average 35 per cent of recorded visible export earnings in Africa and 46 per cent in Latin America. In the Least Developed Countries it was 70 per cent or more. This dependence makes developing countries very vulnerable to structural and short-term fluctuations in commodity markets. Over the last two decades real world market commodity prices have declined by about 45 per cent for food, 25 per cent for agricultural raw materials and 40 per cent for minerals, ores and metals. This downward path grew considerably steeper in the 1980s (see table 1).

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[4] A fuller sectoral analysis will be contained in the paper which the UNCTAD secretariat is to present to a future session of the Trade and Development Board in response to Board decision 384 (XXXVII) para. 5.

Table 1

Average annual rate of percentage change in market prices of primary commodities, in constant 1980 dollars [a]

Commodity	1970-90	1970-82	1982-90
Total food	-3.9	-1.5	-5.1
Food	-4.2	-2.3	-2.7
Tropical beverages	-2.1	2.3	-11.1
Vegetable oilseeds and oils	-5.0	-3.3	-9.9
Agricultural raw materials	-1.5	-0.4	-2.5
Minerals, ores and metals	-2.4	-3.2	0.0

Source: Table A.2 of UNCTAD Commodity Yearbook, 1990.

a Constant dollars defined as current dollars divided by the export unit value of manufactured goods exported by developed market-economy countries.

19. The combined effects of low commodity prices, increasing import prices and high debt service ratios may force developing countries to expand their commodity production even more, just to avoid a collapse of their economies. This phenomenon of increased supply in response to lower export price has considerably aggravated the poverty-resource degradation cycle in which quite a number of resource-dependent developing countries are trapped.

20. Meanwhile, low export prices for resources encourages resource consumption in importing countries, thereby hastening the depletion of non-renewable resources. If the production technology of the developed countries emphasizes the heavy use of some natural resources such as wood or minerals of which they do not have an abundant supply, or which they have decided to conserve, then the pressure on the countries which do possess those resources could become more intense. As the resource base on which the exporting countries depend for their development shrinks, they become exposed to conditionalities of various kinds which developed countries may try to impose.[5]

21. In many developing countries, the agricultural sector suffers from an inappropriate incentive structure under which both the export crop and the domestic food supply sectors operate. The agricultural sector may be heavily taxed or otherwise controlled to generate revenue for expansion of other sectors or to keep down the urban cost of living. These problems are worsened by agricultural protectionism in developed countries and their subsidization of food exports that compete with certain developing country commodities such as rice, sugar, soya beans and maize. In short, policy failures in both developing and developed countries have deprived the agricultural sector in developing countries of the income it needs to meet the full social costs of its activities.

22. Uncontrolled logging is an important cause of natural resource degradation in a number of developing countries. Growing awareness of the need to enhance economic efficiency as well as the ecologically sound management of tropical timber stocks has led to the establishment of the International Tropical Timber Agreement (1983). This is a pioneer instrument among commodity agreements in recognizing explicitly the need for ecologically sustainable resource management.

23. Importation by developed countries of minerals from developing countries, measured as the share in total consumption, has been increasing. Between 1985 and 1987 almost 80 per cent of total world exports of tin ore and metal, almost 60 per cent of world exports of copper ore and

5 ECLAC, *Sustainable development: changing production patterns, social equity and the environment*, LC/G.1648(CONF.80/2) 1991.

metal and more than 40 per cent of world exports of iron originated in developing countries. Export incomes from minerals and metals from many developing countries have stagnated, impairing their financial capabilities to mitigate adverse environmental impacts. Although the environmental effects of mining and primary processing of minerals are much more localized than is the case for timber and agricultural commodities, they are also much more devastating. Metal compounds from tailings leaking into surface or ground water can cause serious problems. Processing metals and minerals may result in releases of dust, gases and liquid residues; processing itself also often requires large amounts of energy.

24. The Lomé Convention between the European Community and the African, Caribbean and Pacific (ACP) countries provides for financial mechanisms with regard to agricultural and mineral commodities to compensate developing countries for significant reductions in their export earnings. They are more than price stabilizing mechanisms. Under Lomé IV, sustainable resource management has been recognized as one of the central objectives of member countries. The Convention establishes no operational linkage between preferential treatment and the environmental performance of recipient countries.

25. Recently, developing countries began to question the free access of industries in the developed world to their gene reservoirs. This has been triggered by the increase in the privatization of research and development activities in bio-technology which could accelerate the pace of demands for intellectual property protection of modifications and applications of wild plants to the benefit of food and pharmaceutical industries in the industrialized world, without any economic rents accruing to the developing countries.

26. A major side effect of the expansion of primary production is the loss of wildlife habitats. Wildlife habitats account for more than 99 per cent of the gene pools of the world, the bulk being located in tropical countries.

27. Trade in a number of wildlife products is regulated in the Convention on International Trade in Endangered Species (CITES), to which 110 countries are parties. Total export value of wildlife products (excluding timber and fish) is estimated at US$ 4 billion, including illegal trade. There has been considerable debate about whether economic incentives or legal restrictions are more effective in conserving particular types of endangered species. Opinion remains divided. The issue is likely to be the subject of debate at the eighth meeting of the Conference of the Parties to the Convention, in March 1992. The subject deserves further study.

B. Future developments in environmental policies and possible impacts on products

28. It is generally recognized that environmental degradation worldwide has its origin in a set of interrelated factors:

(a) Gross inequality of income and of access to resources, both between and within countries;

(b) Deficiencies in the information basis needed to make a proper assessment of the carrying capacities of ecosystems;

(c) Deficiencies in market mechanisms owing to trade distortions and problems such as those inherent in reflecting externalities in prices and the joint use of environmental resources for commercial and non-commercial purposes.[6]

(d) Deficiencies in policy interventions owing to a preoccupation with narrow sectoral interests and a focus on short-term growth objectives.

29. Many countries, including developing ones, are devising ways of enhancing the integration of environmental concerns into decisions made in the public and private sectors of the economy,

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[6] For a more comprehensive listing of problems which sustainable development raises for economics, see ***Sustainable Development and UNCTAD Activities***. Report by the UNCTAD secretariat (TD/B/1267, 7 August 1990), paras. 19-29.

including trade. General features of new policy approaches are:

(a) More emphasis on the prevention of environmental hazards by a more extensive use of risk assessment techniques. The general tendency is to tighten acceptable risk margins in accordance with the ***precautionary principle***;[7]

(b) More comprehensive environmental planning aiming at more effective control of the transfer of pollutants through different environmental media - air, water, soil - (***cross-media pollution control)*** and of exposure to hazardous substances in different stages of product cycles ***(cradle-to-grave control)***;

(c) The establishment of appropriate mechanisms to assess and review the environmental impacts of sectoral policies (agriculture, industry, transport, energy) and to enhance the use of sectoral policy instruments (permits, subsidies, taxes, technology development and so on) for environmental purposes;[8]

(d) A more extensive use of economic incentives to encourage the development and application of clean and resource-efficient technologies and to ensure a more realistic pricing of the use of environmental resources by a more rigorous application of the ***Polluter-Pays Principle (PPP).***

(e) More broadly, applying the ***User-Pays Principle*** (UPP) to resource use would be a major factor in reducing resource use conflict, minimizing environmental and social impact and improving resource-use efficiency. The UPP implies that all resource users should pay for the full long-run marginal social costs of the usable resource and related services.

(f) More extensive international cooperation and coordination in tackling transboundary and global environmental problems; enhanced consensus on appropriate approaches to domestic environmental and natural-resource management problems.

30. These developments are likely to have a considerable influence on the pattern of production, consumption and trade. These effects will be triggered mainly by the industrialized countries. Some of the major trends likely to emerge have been outlined below and an attempt has been made to identify some of the more important effects on North-South trade in commodities and manufactures.

(1) Proliferation of product regulations

31. One of the most marked features of future environmental policies in the developed market economies will be the proliferation of environmental regulations in product markets. Most developed countries are confronted with a continuing accumulation of toxic materials in the environment owing to the diffuse use and disposal of chemical products, durables and packaging materials. The trend will be to enforce or to encourage the use of more environmentally sound products. This will be done by a variety of instruments, such as registration and certification of chemical products, user restrictions and bans, product quality standards, labelling, and economic mechanisms such as taxing "dirty" products or encouraging deposit-refund systems.

32. It may be assumed that across-the-board access to hazardous and resource-inefficient products will become increasingly difficult in developed market economies. Less clear is the extent to which developed countries will follow a co-ordinated approach. From the trade point of view, uniform product standards and similar forms of product regulation are more convenient. However, from an environmental point of view, there is a preference to adjust product standards to the specific environmental conditions in each country. This calls for a certain differentiation of product standards to enable countries which are exposed to high levels of environmental stress to impose

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7 "In order to achieve sustainable development, policies must be based on the precautionary principle.... Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation", ***Bergen Ministerial Declaration on Sustainable Development in the ECE Region***, 16 May 1990, para. 7.

8 These questions will be analysed in the paper which the UNCTAD secretariat is to present to a future session of the Trade and Development Board in response to Board decision 384 (XXXVII), para. 5.

more stringent standards.

33. The diversity of situations calls for a diversity of policy instruments which have to be adapted to national, regional or local environmental conditions in order to ensure an efficient achievement of quality objectives. International harmonization of environmental policy instruments is, however, required to prevent the introduction of deliberate or unintentional trade distortions. "Harmonization" is a generic term encompassing several forms of concerted action such as (a) uniformity of policies; (b) agreement on common policy instruments while leaving each country free to adopt the form of its implementation; or (c) agreement on common principles (e.g. PPP).[9]

(2) Impacts on product technology

34. The drive to environmentally sound products is likely to trigger off wide-ranging innovation.

- Much of this innovation will focus on reducing the use of hazardous substances or replacing them by less harmful substances. This will particularly affect the use of asbestos, heavy metals, hydrocarbons and chlorinated hydrocarbons in all sorts of products.

- Industrial boilers, engines, electric motors and pneumatic equipment, for instance, will have to meet increasingly tighter energy efficiency standards as will such consumer durables as furnaces, air conditioners, refrigerators and other electric-powered articles. Similar developments will take place in respect of water-consuming appliances.

- The use of non-degradable chemical materials will be discouraged. This may put a premium on the use of organic materials where they can offer a substitute as, for instance, in packaging materials. In many cases, the substitution will be one from a non-degradable compound into one that decomposes more easily or which can be re-used.

- To facilitate the recovery and recycling of minerals and metals, it is likely that the construction of industrial equipment and durables will have to meet special design and construction standards.

- Food products will have to meet increasingly tighter standards with regard to pesticide residues, additives and preservation techniques.

35. Achieving the environmental standards which are now desired depends to a great extent on the development and use of environmentally sound technologies in all countries. These technologies play a key role in reconciling the need for sustained growth and the concern for the environment, including global environmental problems. The need to improve the access of developing countries to these technologies must be underlined.

36. In many sectors, environmentally sound technologies are simultaneously capital-, science- and management-intensive. This situation may render access difficult for certain countries and populations. It follows that other suitable technologies also need to be developed and used, locally or internationally. In any case, the transfer of obsolete technologies to developing countries should be avoided.

37. Companies constitute an important source of pollution, but at the same time they are especially well-placed to promote the technologies needed to combat environmental problems. The commitment of enterprises should be sought with a view to develop environmentally sound technologies and to ensure their accessibility for developing countries. A large percentage of international technology transfer takes place within firms, which constitutes an obstacle to open trade in technology. This problem is particularly acute in the case of environment-related technologies: as most of them are new, they are often "locked up" in enterprises, while older, less environmentally sound, technologies are more easily and freely available.

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[9] See ***guidelines for the application of economic instruments in environmental policy***, background paper 1 of the OECD Environment Committee Meeting at ministerial level, 30-31 January 1991, pp. 70-71.

38. The international dialogue on the transfer of technology, which has been pursued for many years in UNCTAD, could be revived around environmental concerns. A major component of this dialogue would be to determine a good balance between the protection of technological innovation and the larger diffusion of basic, environmentally sound technologies. In any event, the need should be underlined for financial and technical assistance to developing countries to help them gain access to such technologies and to enlarge the corresponding skill and knowledge base required at the national and local levels.

(3) Possible impacts on exports from developing countries

39. The possible impact of more stringent product regulations on the export position of developing countries will be quite different for various types of products and market segments. Specific product-targeted assessments can only be made on the basis of an in-depth analysis of technology opportunities and their costs. Even so large degrees of uncertainty will remain. With these caveats in mind an attempt can be made to outline some of the impacts.

40. A simple classification of types of impact may help in understanding the sectoral analysis which follows. Environmental measures influencing international trade may affect (a) finished products, through environmentally harmful residues contained in them, (b) production processes, especially if they affect the global environment - e.g. through gas emissions producing a greenhouse effect as a consequence of energy use or (c) unsustainable exploitation of natural resources. Environmental concern in developed countries is influencing the evolution of technology; developing countries largely depend on technologies obtained from developed countries, embodied for instance in capital goods. The technologies available are changing as a result of environmental concerns in the northern hemisphere. Lastly, consumers make their decisions to some extent in the light of what they consider to be proper behaviour beyond immediate economic criteria of choice. The boycott of certain baby food manufacturers confirms that such behaviour can be influential.

41. Though agricultural raw materials, in general, are unlikely to become the object of product regulations themselves, it is possible that restrictions will be imposed on imports from countries that do not meet certain standards of sustainable resource management. It is also possible that some shift in production to developing countries will take place owing to increasing resource constraints in the developed countries. Opportunities for increased exports may also come because of some replacement of chemical-based products by organic fibres (packaging materials, furniture, construction components, textiles) but they are likely to be modest. Limitations on the use of chemical inputs in agriculture may also provide export opportunities for developing countries in terms of alternative inputs based on natural products such as pyrethrum. Export opportunities may also come as a result of reducing the production of some agricultural products in the developed countries.

42. In the case of minerals and metals, the current trend is declining inputs per unit of output in the industrialized countries. This trend is likely to be strengthened by further improvements in refining and recycling. The negative impact which this may have on the export position of developing countries may be offset somehwat by continued strong growth in minerals and metals demand in developing countries as well as by further shifts in primary production processes owing to natural resource supply constraints and tigher environmental controls in industrialized countries. This, in combination with higher energy and transport costs, may also facilitate further processing in countries of origin.

43. The export of food products from developing countries is likely to be affected by tighter standards regarding pesticide residues and the use of chemical additives in food processing and preservation. Technologies compatible with these standards are not significantly more costly than the present ones. What is needed is to ensure that developing countries have adequate access to new pesticides and techniques of integrated pest control. Technical adjustments in the food processing industries to meet product standards may however be more complicated and costly. In both cases, it is likely that more stringent product control requirements in the developed countries will also have a positive impact on the protection of domestic environments in the developing countries. Financial problems associated with improvements in environmental technology of food production and food processing can be alleviated substantially by a reduction of trade barriers in the developed market economies.

44. An important segment of the export market of developing countries consists of natural resource-based products such as textiles, leather, metal and wooden products. These manufactures are produced by relatively pollution-intensive processing techniques (e.g. traditional tanning, dyeing, electroplating, wood preserving). The export of such manufactures may be affected because of further restrictions on the chemical compounds and heavy metals contained in them. To some extent, more stringent product requirements can probably be met by a simple substitution of inputs; in other cases, significant alterations in processing techniques may be required. However, substantial changes in processing techniques are also required to reduce the often excessive discharge of pollutants in the domestic environment. Therefore, this is another case where stringent product requirements may have a spin-off on environmental protection in developing countries.

45. Much of the proliferation of environmental product regulations in the industrialized countries will focus on the use of basic chemicals, chemical specialities, motor vehicle engines, industrial and power equipment and consumer durables. The technology needed for the production of "clean" and "energy-efficient" alternatives will, in many cases, require a substantial further increase of already high inputs of financial and human capital characteristic of these types of industries. This may prove to be a further setback in terms of export opportunities for developing countries. However, a possible spin-off from this trend could be the expansion of the production of less environmentally advanced industrial equipment and durables in developing countries.

46. To illustrate this point it must be noted that the development and marketing of resource-efficient equipment and durables in the developed world will be enforced either by direct regulation or by raising the costs of resource use either through direct pricing, taxes or charges. In both cases, the effect is that the break-even point - where cost increases match the cost savings resulting from lower resource consumption - is raised. It may be argued that in developing countries where the use of energy, chemicals and other hazardous materials is much lower, adequate environmental protection can be achieved with less stringent requirements regarding the resource efficiency of industrial equipment and durables. This implies that the break-even point between prices and resource savings will generally be lower than in the industrialized countries. This differential already exists and may be expected to increase, particularly when the industrialized countries take the lead in reducing certain gaseous emissions. Therefore, it is quite conceivable that for certain products a kind of dual world market will emerge: one of relatively expensive, high-tech, high-quality, more environmentally advanced products in the developed world and another market of relatively cheap products, less sophisticated or with a greater impact on the environment but adapted to the specific economic and environmental conditions in the developing world.

47. Differences of this kind in products destined for different markets, or environmental standards related to different geographical conditions, can serve sustainable development. It also opens up new prospects for economic co-operation among developing countries. Not only trade policy and trade promotion, but also technology policy should be oriented to encourage this kind of specialization and cooperation.

48. This observation should not be interpreted as minimizing the need for more resource-efficient products in developing countries but more as an argument for the development of product technologies that are cost-efficient in the context of those countries. The argument for appropriate standards and technologies applies *a fortiori* to the environmental control of production processes, a subject which will be covered in the next section.

C. Impacts on the location and technology of production

49. Areas with high levels of stress on the environment owing to a high density of polluting and resource-intensive activities, will need to have more stringent emission source control measures than ones where overall levels of environmentally-damaging activities are lower in relation to the assimilative capacity of the environment and their stock of natural resources. Though there are many areas subject to severe environmental degradation in developing countries, it can be maintained that places can be found where adequate environmental protection can be achieved with less stringent control measures than required in the industrialized countries, at least for the next 10 to 20 years.

50. Comparative trade advantages might even be strengthened if environmental quality standards are going to be less demanding than those in developed countries because of differences in attitudes with regard to the trade-offs to be made between environmental quality objectives and economic growth. It should be recalled that an essential element of the Polluter-Pays Principle is that the "acceptable state" of the environment to be achieved is determined by collective choice through a political process in the area concerned.[10]

51. Whether, and to what extent, a shift in production will occur is difficult to assess, not only because it depends upon the relative significance of environmental control costs in total production costs - which may change over time - but also on the way developed countries and the international community at large are going to deal with possible trade effects associated with different levels of environmental control between North and South. This issue calls for astute negotiation between developing and developed countries.

(1) Relocation of industries

52. A number of empirical studies have been carried out to investigate claims of "industrial flight", industries moving away from industrialized countries to developing countries. It has been found that in spite of the stringent environmental regulations imposed on industries during the 1970s and early 1980s by most industrialized countries, there have been no measurable effects on international trade patterns. The main explanation for this is the relatively low share of environmental costs in total product costs, even for industries engaged in the production of "pollution-intensive" commodities such as non-ferrous metals, iron and steel, paper and pulp or chemicals. For instance, in the United States, estimated cost increases attributed to environmental control in those industries varied between only 1.9 and 2.9 per cent. It is not surprising, therefore, that there is no evidence of any significant "pollution haven" effect in the Third World even though average pollution control cost levels in developing countries were about 50 to 60 per cent below United States levels.

53. It may be argued that an increasing environmental awareness and a tightening of pollution control standards in the industrialized countries will be biased against a further expansion of "dirty" production processes in those countries. This may lead to a process where developing countries will be encouraged to specialize in "dirtier" upstream processing while the developed countries will focus on the production of "cleaner" downstream intermediates and final goods. There is indeed some evidence that such shifts are already taking place, for whatever reasons, particularly in the processing of metal commodities. Developing countries have succeeded in increasing substantially their share in the processing of metal ores, as shown in table 2.

54. It is to be expected that this trend will continue. However, in order to avoid serious environmental degradation, further expansion of mineral and metal processing industries must take place within the constraints which appropriate regard for the environment would impose. This implies that developing countries should be able to market their products at prices which will allow an adequate coverage of environmental control costs. The difficulties developing countries face in this respect may be illustrated by the fact that the real value of mineral exports by the main commodity exporting countries in 1987 was only 80 per cent of the value in 1980; despite a substantial increase in the volume of exports. It is not likely that this situation can be improved much by a further expansion of upstream processing because most of the added value involved in the production of mineral and metal products is realized further downstream at the less-polluting stages of processing and manufacturing. Expansion of developing countries' production in these stages is hampered by such factors as limited size of their domestic or regional markets, distance to main consuming markets and, for the more processed products, by escalating tariffs and non-tariff measures in many important consuming countries.

(2) Facilitating technology adjustment

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10 "Note on the implementation of the Polluter-Pays Principle" para. 2, appended to the ***recommendation of the OECD council on guiding principles concerning international economic aspects of environmental policies***, adopted by the Council at its 293rd meeting on 26 May 1972.

Table 2

Raw material output processed in principal developing countries as a percentage of primary production

	1980-1982			1986-1987		
	1st Stage	2nd Stage	3rd Stage [a]	1st Stage	2nd Stage	3rd Stage
Aluminium	30	20	16	41	31	24.5
Copper	74	60	26	81	70	35
Iron	32.5	49	n.a.	37	57.5	n.a.
Tin	94	13	n.a.	103	30	n.a.
Nickel	43	14.5	n.a.	54	26	n.a.

Source: UNCTAD Commodity Yearbook 1989.

a Primary production and processed products by individual commodity are shown in the table below:

Commodity	Primary production	1st stage of processing	2nd stage of processing	3rd stage of processing
Aluminium	Bauxite	Alumina	Aluminium refined	Refined aluminium consumption
Copper	Copper ore	Blister copper	Refined copper	Refined copper consumption
Iron	Iron ore	Pig iron	Crude steel	
Tin	Tin ore	Tin metal	Primary tin metal consumption	
Nickel	Nickel ore	Refined nickel	Refined nickel consumption	

55. The fact that developing countries may have a comparative trade advantage in terms of more abundant natural resources and lower overall pollution loads does not imply that there is not an urgent need to improve environmental practices in primary and secondary production. On the contrary, in some cases existing primary processing industries in developing countries would not survive without heavy subsidies and protection because of heavy inputs of energy and other natural resources, as well as chemical inputs. In other industries, high resource costs are masked by low labour costs. In a number of developing countries, weaknesses in resource management limit agricultural productivity, restricting the scope for a shift of agricultural production from other countries to them.

56. It may be argued that in many cases the heavy use of resources and excessive pollution-production ratios are attributed more to managerial weaknesses and inappropriate incentives than to lack of low cost technical solutions. Hence, a first requirement for any improvement in environmental performance is a more consistent application of the Polluter-Pays and User-Pays Principles in the sense that industries are forced to use the "best practicable means" of pollution control and to set more realistic prices for the supply of energy, water, land and other raw materials.

57. In order to overcome existing financial constraints within industries and to smooth the adjustment of existing industries, financial support is undoubtedly needed. Transitional measures would include a gradual phasing out of existing direct or indirect subsidies to resource supply. It is worth stressing that an environmentally sound technological adjustment can be achieved only if Governments in both developed and developing countries break away from distortive and environmentally damaging policy intervention and subsidy mechanisms. Their ability to do so and to get out of the poverty-resource-degradation trap is, however, also strongly dependent on the overall availability of resources. This can in turn be enhanced by the removal of distortive trade restrictions in the industrialized countries.

58. Where existing trade distortions and inappropriate incentive structures are already obstructing the full-scale application of currently available and feasible environmental technologies, they certainly will become a major obstacle to the development and implementation of technolo-

gies needed to achieve sustainable environmental conditions in a global context. Global warming can serve as an example. Studies carried out to assess the cost implications of the prevention (or rather the delay) of global warming arrive at cost estimates that vary between US$30 and US$70 per ton carbon retained, or equivalent measures such as the substitution of fossil fuels by solar, wind and biomass energy, or carbon sinks by means of large-scale re-afforestation. This estimate is based on scenarios that aim at a 10 to 20 per cent reduction of gas emissions producing the greenhouse effect by the years 2005-2010 compared to current levels. Total annual costs would rise by about 0.5-3.0 per cent of gross world product. One study estimates that a 20 per cent reduction below 1990 levels to be achieved by 2020 for the countries in the OECD, the Soviet Union and Eastern Europe in combination with a doubling of "greenhouse" gas emissions by the developing world would have a GNP cost impact of 1 to 2 per cent for OECD, 4 per cent for the USSR and Eastern Europe and 5 per cent for the rest of the world. Although these figures can be challenged, they do offer an idea of the order of magnitude involved; beyond doubt the financial resources needed to meet the objectives are enormous. For the OECD countries, it will amount to a doubling of existing levels of environmental expenditure. In the case of developing countries, this prediction would mean that in the long run environmental expenditure will have to rise to levels that are about 3 or 4 times higher than current levels of development assistance.[11]

59. Acknowledging that in the short and medium term the pressure on financial resources will be much lower, it will nevertheless be substantial and certainly beyond the current financial capabilities of developing countries. Therefore, it is evident that any serious effort by developing countries to mitigate gaseous emissions producing the greenhouse effect must be backed by a considerable increase in financial assistance. The same conclusion can be drawn with regard to a number of other environmental issues: it is unlikely that financial transfers currently in prospect will bridge the gap between the financial capabilities of developing countries and the financial needs of meeting global environmental objectives. Therefore, it may be expected that developing countries will be able to act only if they are assured of access to additional economic resources.

60. New technologies which are less polluting or more efficient in resource or energy use may be cheaper to operate than the old technologies they replace. If developing countries are not to be disadvantaged by a twist in innovation, they need assured access to new technology on fair terms. Since the use of some forms of environmentally sound technology may actually benefit the global environment and hence that of developed countries, the latter may be inclined to facilitate their adoption in these cases. Of particular importance from the trade point of view is technical assistance in adjusting process and product technology to meet environmental product standards in industrialized countries. Further assistance is also required to explore marketing possibilities of "natural" products such as organic fibres and "pesticide free" products.

D. Trade policy for sustainable development

61. At the centre of the debate regarding trade and environment are concerns about potential conflicts between trade liberalization and the need for more effective environmental control. These concerns are related to both potential tensions between objectives of trade liberalization and environmental objectives, as well as to the question of what constitutes the proper use of trade and environmental policy instruments respectively.

62. The underlying rationale of trade policies is that, with a few exceptions, free trade serves the objective of an efficient allocation of scarce economic resources in order to enhance economic welfare and growth. Though comparative trade advantages are increasingly determined by differences in technology advancement and human skills, natural factor endowments still play a singificant role. Hence, one of the central objectives of GATT is to allow countries to take advantage of differences in natural factor endowments.

63. The main condition for trade to serve sustainable development is that end-user prices reflect the real costs of measures necessary to protect and conserve environmental resources in the countries of origin as well as in the country of destination (or transit, in the case of transport) in-

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11 Scott Barrett, *Economic instruments for climate change policy*, unpublished paper prepared for OECD, 1990.

volved in the production, consumption and disposal of products. Given that the fundamental objective is trade based on relative prices which fully reflect marginal social costs (including externalities), trade policy must be designed in consequence. In some cases, this may result in less intervention in markets than at present (e.g. the agriculture of developed market-economy countries), but in other cases it may call for more intervention (e.g. with respect to energy in the light of global warming). Given this fundamental objective, countries with high environmental pressures may well need to impose more stringent measures on domestic production, consumption and disposal than countries with relatively low levels of environmental stress.

64. Without appropriate incentives to enhance the efficiency of resource use, there is scant hope of achieving sustainable environmental conditions. A crucial criterion for judging the economic efficiency of sustainable natural resource use is the equation of real marginal costs of supply and real marginal costs of environmental protection at sustainable levels. Provided that in all countries production and end-use prices incorporate the full cost of resource use (the Polluter-Pays and User-Pays Principles), trade liberalization will induce shifts in production, leading to a more efficient and sustainable use of environmental resources throughout the world. Conversely, the extent to which existing trade barriers prevent an appropriate pricing and allocation of the real user costs of environmental resources, they are detrimental to the objectives of sustainable development. Hence, it may be argued that trade policy should follow a two-way path. One path is the removal of distortive trade barriers that obstruct fair trade and efficient resource use. The other path should make way for the use of non-distortive environmental and trade instruments that put a premium on sustainable resource use subject to the trade principle of equal treatment of domestic and foreign suppliers.

65. Though increased co-ordination of environmental measures will help to reduce potential trade conflicts over environmental measures, it is unlikely to result in a move towards uniform emission and product standards, nor is this option necessarily environmentally desirable or economically efficient. In international trade it is necessary to allow for an appropriate differentiation of environmental standards. Other complementary options are to incorporate environmental principles and operational instruments into commodity agreements and preferential trade arrangements, on the one hand (in this connection, the International Tropical Timber Agreement, 1983, as well as the International Agreement on Jute and Jute Products of 1982 and its successor of 1989, incorporated provisions of this kind) and on the other hand, to ensure that global environmental agreements containing trade measures are consistent with fair and efficient trade.

66. To achieve this, international consensus is necessary with regard to the form which international harmonization of environmental policy instruments should take in combination with a consistent application of the Polluter- and User-Pays Principles. In order to be effective, however, international environmental arrangements will have to be backed up by adequate instruments that deal with "free-rider" problems. In practice, this is sometimes achieved by resorting to trade measures. This has been demonstrated, for instance, by the Montreal Protocol on Substances that Deplete the Ozone Layer.

67. The problem of the kind or degree of discrimination in the application of trade measures to non-participants, in order to deal with free riders, remains to be worked out, however. Legal experts have not yet agreed on whether this kind of discrimination is in conformity with GATT arrangements. Furthermore, some argue that international environmental agreements should prevail over GATT rules if this could bar the way of free riders, provided that such agreements were ratified by a large number of countries. While it is certainly the case that individual countries have the right not to join in international agreements, that right has to be reconciled with the concept of shared responsibility for the global environment. It is generally agreed that trade measures of this kind should be proportional to the objectives to be achieved. Trade restrictive effects should not be out of proportion to the legitimate environmental objectives that regulations are intended to meet. However, the operational meaning to be given to proportionality still remains to be worked out.

68. Distorted resource-exploitation patterns have established themselves in developing countries over the last 30 years as a result of agricultural protectionism, trade restrictions and other market imperfections in the developed world. Even if these obstacles were removed, it would take time for developing countries to adjust to the changes and adopt the more sustainable resource management practices which this would allow. The adjustment of existing production and trade patterns and the introduction of sustainable resource management practices not only takes time, it also has

to be financed. Poverty and financial constraints can only be overcome by economic growth in places where essential needs are not being met.[12] Insofar as poverty is an immediate cause of environmental degradation, growth focused on these places could relieve environmental pressures.

69. Even those who maintain that economic growth in any circumstances increases environmental pressures can hardly argue against more open markets in the developed world, because the aggregate effect of prolongation of existing trade protection would be even worse. The challenge is in any event to offset as much as possible negative impacts of economic growth by more effective and efficient resource management and conservation practices. This requires that trade liberalization be accompanied by appropriate technical and financial assistance as well as the use of environmentally related non-distortive trade instruments that would facilitate the integration of environmental concerns into production and trade patterns.

70. Commodity agreements can provide an operational framework for addressing many of the issues sketched above. Commodity agreements, especially in the framework of the Integrated Programme for Commodities, can also provide an important framework for channelling financial and technical assistance to enhance sustainable resource management in developing countries.

71. The Generalized System of Preferences (GSP) originated in 1968 at UNCTAD II. It represents a derogation of the Most Favoured Nation Principle of GATT in allowing more favourable treatment for developing countries. The objective of the GSP is to increase export earnings, to promote industrialization and to accelerate the growth of developing countries. Other preferential arrangements are operated by developed countries at the national level or in the context of groups of countries. This actually means the existence of a number of separate preferential arrangements. They grant preferences to developing countries in the form of tariff reductions, separate from or in combination with quantitative restrictions. Many arrangements also provide for technical assistance.

72. GSP has been applied on a non-reciprocal basis; emphasis needs to be put on the fact that GSP was established as a "generalized", non-reciprocal and non-discriminatory scheme of preferences beneficial to the developing countries" without any condition. Environmental protection should not be used as a conditionality by donor countries in their GSP schemes.

73. There is a need to analyse trade measures taken in the framework of international environmental agreements to see how GATT rules should be clarified or adapted to make them and the environmental agreements compatible without harming - or even better - while enhancing the development prospects of developing countries. Analyses of this kind should not ignore possible alternatives to trade measures for achieving the same purposes. Effective monitoring of environment-related trade measures constitutes one aspect of this. This specific question is taken up in Chapter II.

Conclusion

74. It should be emphasized that the foregoing has striven to present options in which trade and environmental objectives are mutually supportive. They all have their pros and cons which should be assessed in more detail, particularly with regard to their implications for developing countries. The effects of trade liberalization on the environment needs more analysis. This is particularly so with regard to the effects on sustainable development in developing countries brought about by removing existing trade distortions in developed countries (especially in agriculture). It is also important to analyse the impact of environmental regulations on trade, including trade-related policy measures in the framework of international environmental agreements, as well as the relation of such environmental measures and GATT principles in the perspective of the development aspirations of developing countries. In this analysis, the question of environmental standards and their differentiation according to local and national conditions, particularly in developing countries, calls for particular attention.

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12 World Commission on Environment and Development, *Our Common Future*, op. cit. p.44.

75. The following principles could guide trade measures taken on environmental grounds. Firstly, the basic GATT principles on non-discrimination are relevant for environmental purposes. They stipulate that measures "must not result in arbitrary or unjustifiable discrimination between countries where the same conditions prevail" and that they should not be a disguised restriction to international trade. Environmental regulations should not act as non-tariff barriers. Secondly, the proportionality principle should apply where trade instruments are deemed necessary for environmental purposes. This principle invites countries, in adopting trade measures for environmental reasons, to assess whether their trade restrictive effects are proportional to the legitimate objectives of the proposed measure. Thirdly, the precautionary principle should be applied when setting standards and establishing corresponding trade measures. However, in order to avoid an overestimate of dangers, scientific evidence should be fostered; enterprises can contribute to this requirement, given their scientific and technical knowledge.

76. There is a need for more information and transparency regarding trade measures related to the environment. The GATT Agreement on Technical Barriers to Trade requires parties to use international standards, when they exist, as a basis for their technical regulations. Environmental concerns can be expected to generate a growing number of such regulations: the establishment of international standards for environmental protection is thus a matter of some urgency and could help avoid misuse of these regulations. In the absence of such standards, contracting parties should follow the requirement of the Agreement on Technical Barriers to Trade to give notification of technical regulations in draft form to other parties for comment. In addition, environment-related trade measures need to be effectively monitored. The UNCTAD Trade Control Measures Informations System can contribute to this objective. Chapter II below is devoted to a discussion of this system.

77. However, it should be stressed that creating an appropriate interface between trade measures and environmental measures will not, by itself, achieve sustainable development on a global scale. That requires a broader approach to the problems faced by developing countries. Part and parcel of such a comprehensive approach should be a considerable increase in development assistance taken in a broad sense to include access to technology and support for environmentally benign practices already followed in developing countries, as well as the establishment of fairer trade relations between North and South. In short, sustainable development, which is in the interest of developed as of developing countries, will best be achieved in a supportive international economic environment.

Chapter II

UNCTAD's Trade Control Measures Information System

Introduction

78. With the growing awareness of environmental problems and the proliferation of environmental regulations, there is increased interest in analysing the interlinkages between trade and environment. Environmental policies can affect trade through the impact of environmental standards on production costs. They can also have an impact on trade practices and lead to trade frictions. Conversely, increased awareness of environmental problems could create opportunities for trade in environmentally sound products and production processes.

79. Trade policy analysts are increasingly concerned that environmental standards, laws and regulations may become barriers to trade. It is sometimes argued that environmental protection is used as a pretext for imposing trade barriers that are in reality protection of domestic industry from import competition. Some countries are seen as imposing environmental standards, laws and regulations that are felt to be "excessive" and which might have the effect of trade barriers. While studies to date have not found evidence of environmental policies causing significant international trade distortions, the potential for trade distortion is growing, particularly for developing countries. It is, therefore, extremely important to analyse and monitor how environmental rules and regulations could affect trade, and to examine ways of preventing environmental measures from becoming trade barriers. Adjustment of UNCTAD's Trade Control Measures Information System

with a view to adequately covering environmental measures potentially bearing on international trade will be an invaluable tool for analysis of the information sought.

A. The Trade Control Measures Information System[13]

80. For a number of years, the UNCTAD secretariat has been collecting information on trade measures which, either in practice or potentially, affect international trade flows. Both the coverage and quality of this information have been gradually improved, and information on more than 100 countries has now been computerized. The UNCTAD data base on trade control measures constitutes the most comprehensive computerized information system on such measures applied in developed and developing countries. The information is updated continuously, according to resource availabilities, and can be linked with computerized information on trade flows.

81. The information is collected by the secretariat from published official sources, as far as possible in cooperation with the authorities in member States. Official journals and circulars are continuously reviewed in order to identify changes in trade practices and restrictions. In addition, GATT documents are an important source of information. The Secretary-General of UNCTAD also requests member States to submit details of recent changes in tariffs and non-tariff measures.

B. Organization of the data base

82. The information on Trade Control Measures (TCMs) is stored in country files at the national tariff line level. It consists of the description of the TCM; the source used; the trading partners affected (indicating a country-specific application of a measure, if any); the date of initiation and eventual termination; and comments provided by UNCTAD member States on their own trade measures. The information is entered into the computer in numeric codes. The descriptions of products, measures and sources are kept in separate files which may be drawn upon for presentation in various combinations. It may become necessary to enlarge the descriptive and bibliographic parts of the data base when encoding environmental measures and regulations.

C. Use of the data base

83. The data base has been used for many purposes, such as the analysis of development in national trade policies and world trading conditions, assistance to Governments in analysing conditions of access to external markets for export development, the preparation of reference materials which help Governments in preparing their participation in multilateral trade negotiations; and research on non-tariff barriers.

D. Trade measures included in the data base

84. The data base currently includes mainly trade measures which are applied at the border. Other policies and practices such as government procurement policies, government industrial and regional development policies, foreign investment policies and macro-economic policies which also affect international trade flows are not covered by the information in the data base. Likewise ex-

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13 See: UNCTAD DDM/Misc. 18/Rev. 1

port subsidies and other export measures are not included in the data base.[14] The data base does not indicate the *de facto* operation or the degree of restrictiveness of a given measure at any particular point in time.

E. Dissemination

85. At its thirty-fourth session, held in May 1988, the Trade and Development Board decided that the UNCTAD secretariat provide, on request, information on trade control measures contained in its computerized data base (decision 354 (XXXIV)). The Intergovernmental Group of Experts on Definitions and Methodology Employed in the UNCTAD Data Base on Trade Measures, which met subsequently, reached agreement on recommendations for implementing this decision of the Trade and Development Board.[15] Following the decision on dissemination, the secretariat has invited the member States to designate focal points for this purpose.[16]

F. Recent developments

86. Through decision 384 (XXXVII), of 12 October 1990, the Trade and Development Board requested the secretariat

> ...in connection with the efforts to promote dialogue within UNCTAD on the interlinkages between environmental and trade policies, to adjust the UNCTAD Trade Control Measures Information System to monitor environmental regulations for possible protectionism and to monitor non-tariff measures which have a bearing on the environment"

87. This decision of the Board was endorsed by the General Assembly in its resolution 45/210 on 21 December 1990. Following this decision and resolution, the UNCTAD secretariat suggested that it would be very useful if member States could provide the secretariat with environmental regulations and, wherever applicable, the corresponding product coverage (TD/B/1282). During the second part of the Thirty-seventh session of the Trade and Development Board, many delegations had responded positively to this suggestion thus showing considerable interest in assisting the secretariat in adjusting the data base. Visits to a number of capitals were planned with a view to discussing problems of definitions and methodology and for collecting relevant information. The experience gained during these discussions was expected to assist the secretariat in designing the framework for systematically collecting the appropriate information.

G. Trade measures having a bearing on the environment

88. The UNCTAD secretariat has compiled information on government regulations and practices that may distort international trade. In the analysis of official trade intervention, priority has been given to measures which introduce differential treatment between imports and domestically produced goods. Standards and regulations have not been included in such analyses.[17] Therefore,

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[14] Except for voluntary export restraint arrangements which constitute quotas on exports to specific foreign markets which are administered by exporting countries, but which are imposed on them by importing countries.

[15] The report of this Group of Experts is contained in document TD/B/1176.

[16] In his note verbale of 5 June 1989, the Secretary General of UNCTAD explained how general access to the information contained in the data base may be requested, and invited each member State to designate a focal point for this purpose.

[17] Although the secretariat makes no *a priori* judgement as to the intention of NTMs, their restrictiveness and their conformity or otherwise with international trade rules, certain prohibitions and licensing requirements affecting specific prodcuts categories such as dangerous and hazardous substances have normally been excluded from such analysis. In document TD B/1267, paragraph 46, the secretariat states that "they (environmental measures) may be justified in

in the context of the annual review of the problem of protectionism, there has been no need to collect information systematically on such measures for all member States. However, some of the country files in the data base already contain information on such measures.[18]

89. The codification of non-tariff measures (NTMs) has been revised recently *inter alia* with a view to identifying more accurately those measures which are defended on environmental and other non-commercial grounds. For instance, NTMs such as prohibitions or licensing requirements which are applied with the stated purpose of protecting public health, wildlife or the environment, are being entered under specific codes. These codes are also being used when the stated purpose of the regulations is not known, but it can clearly be presumed to constitute measures taken with a view to protecting the environment, given the character of the product in question, the domestic legislation concerning the measure or the Ministry responsible for its enforcement. This approach enables the secretariat to reclassify part of the NTMs already included in the data base under a specific group of environmental measures. In the light of the increased interest in analysing trade aspects of environmental measures, it may be necessary to further refine this classification.

90. The following sections provide some background information on how the secretariat is incorporating environmental measures and regulations which may have a bearing on trade and trade measures implemented for environmental reasons. As mentioned before, the secretariat is approaching Member States for advice and information. Contacts are being established with international organizations. The secretariat is also seeking the advice of independent experts.

H. Tariff Measures (TMs)

91. Little or no use has been made of tariffs measures for environmental purposes. A one per cent tariff on tropical timber has been discussed but has never been agreed upon. On the basis of environmental considerations, Austria withdrew some tropical timber items from a tariff offer, concerning further reductions of GSP rates of duty it had tabled in the context of the Uruguay Round negotiations on tropical products.

I. Non-Tariff Measures (NTMs)

(1) Product standards

92. Concern has been expressed that environmental regulations might also act as trade barriers, for instance through the use of relatively minor differences in environmental characteristics beween imported and domestically produced products as a means of favouring domestic products. Enforcement of stringent environmental regulations or standards can restrict market access. Standards should neither be discriminatory nor a disguised barrier to trade. The GATT Agreement on Technical Barriers to Trade (TBT) recognizes that while it is desirable to set technical regulations on the basis of international standards, in practice this may not always be possible. The TBT Agreement, therefore, requires countries, when they adopt mandatory regulations which are not based on international standards, to circulate them in draft form through the GATT secretariat so that other countries can comment on them. The obligation to take into account comments reduces the possibility of the new regulations posing barriers to trade. Such notifications may be an important source of information.[19]

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some cases, but in others they may be the pretext for protectionist measures". While encoding information in the data base it may not be possible "to distinguish between pretexts and valid cases". However, the ongoing task of the secretariat would be to provide Governments with information to help them assess the justification of such measures.

18 In its current status, the data base includes mainly trade measures which are applied on imports at the border. Public regulations which may affect imported goods after customs clearance, have, in principle, not been included in the data base. A number of environmental policies, such as fiscal policies, are not considered in the data base as currently constructed (see section on methodological problems).

19 There have been about 2000 notifications (See: GATT Trade Policy Review, Canada, 1990 (page 240, par. 205)).

93. The number of product standards (health and safety regulations, packaging and labelling requirements, etc.) in each importing country is very high. Apart from Government enforced standards applied in the whole territory, there are also voluntary standards and provincial standards. Currently some country files in the TCM data base contain information on certain standards and regulations, but there is no systematic coverage. In order to improve the coverage of product standards, the secretariat may have to give priority to standards on selected product categories (e.g. those for automobile emissions, chemicals and pesticides)

(2) Internal taxes

94. Information on internal taxes being levied, as (part of) environmental policy measures, on specific products will have to be included in the data base, even when taxes which are applied equally to domestic products and imports may not constitute a non-tariff barrier to trade. Examples are emission charges (taxes on the discharge of pollutants) and product charges (on products containing pollutants, for example, fuels, pesticides and detergents).

J. Unilateral import restrictions, such as prohibitions and charges

(1) GATT Article XX (General Exceptions)

95. GATT Article XX (Exceptions) is relevant for environmental purposes. It recognizes that countries have the right to establish measures "(b) necessary to protect human, animal or plant life or health" and "(g) relating to the conservation of exhaustible national resources, if such measures are made effective in conjunction with restrictions on domestic production or consumption". Conditions are that measures must not result in "arbitrary or unjustifiable discrimination between countries where the same conditions prevail" and not be a disguised restriction on international trade.

96. The use of coercive or retaliatory trade measures with a view to applying pressure on other countries to upgrade their environmental standards is generally not considered acceptable under current international trade rules. A number of trade measures for which Article XX justification has been given have been challenged by trading partners under GATT's dispute settlement mechanism. Import bans have been imposed on salmon, tuna and other fish caught with driftnets.[20] In principle, all measures for which Article XX (b) or (g) justification has been given should be included in the TCM data base. A limitation, however, is that there is no notification obligation for Article XX measures.

(2) Other import bans and charges

97. Information on other restrictions implemented unilaterally by individual countries is collected from national sources.

K. International environmental agreements

98. A series of transfrontier and global environmental problems are being tackled through international conventions. A number of international environmental agreements use trade measures to achieve their objectives. Signatories apply NTMs to comply with the provisions of the such agreements. International agreements exist, *inter alia* to control trade in endangered species. One

[20] Import restrictions in the United States on tuna fish originating in Mexico (based on dolphin kills) have been subject to consultations under GATT's dispute settlement mechanism).

of the best known agreements is the the Washington Convention on International Trade in Species of Wild Flora and Fauna Threatened by Extinction (CITES).[21]

99. The United States International Trade Commission (USITC) recently undertook a study to identify environmental and wildlife agreements that are made effective through trade restrictions.[22] The Commission found that relatively few agreements relied on trade mesures for enforcement. Of 170 agreements designed to protect natural resources, wildlife, and cultural or historical property, only 19 agreements employed trade restrictions (see annex).[23]

100. Other international agreements exist which use trade instruments only, or which apply in a discriminatory way with regard to non-participants (to deal with the problem of free riders). For instance, the Montreal Protocol on Substances that Deplete the Ozone Layer contains trade measures bearing on both imports and exports by non participants.[24] Other examples are the International Whaling Convention (normally special authorizations are required for imports of whales and their preparations from non-member countries).

L. Some methodological problems

(1) Product coverage

101. An important problem is finding the exact product coverage of environmental measures. Currently the highest level of detail used in the data base is the national tariff line. As the data base information has normally been used in combination with trade flows, there has been no need to use a higher level of disaggregation than that used in the corresponding trade statistics. Trade measures affecting only certain portions of national tariff lines have been classified as "ex-items". It may be difficult, or even impossible, to know what part of the trade values reported in computerized trade statistics is covered by the measure in question. So far this problem has been manageable. In the case of environmental measures, "ex-items" may tend to be the rule rather than the exception, however. The consequences are, *inter alia*, that (a) the analysis of trade coverage of environmental measures is extremely difficult and (b) the usual description of the tariff items gives a poor indication of the product coverage of the measure in question, thus requiring the entry of additional information. The future revisions of the Harmonized System nomenclature should possibly take this problem into consideration.[25]

(2) Export measures

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21 Trade in products listed in Annex I are banned while some trade (with permits) is allowed for products listed in Annex II. An example is the ban on ivory trade, agreed under CITES in October 1989 and formally in effect since 1 January 1990 (the African elephant was transferred from an Appendix II listing to Appendix I, banning all trade in elephant products). Trade measures have also been used with regard to domestically prohibited hazardous substances.

22 *U.S.International Trade Commission*, "International Agreements to Protect the Environment and Wildlife", USITC Publication 2351, January 1991.

23 Not counted are some of the 170 agreements which also use trade instruments, but only with regard to non-participants ("free riders").

24 Member countries are expected to reduce production, consumption and imports from member States gradually by stages, over a period of years, while the ban on imports from non-members is to be applied in full at an earlier date. Legal experts have expressed different views on the whether such measures are in conformity with GATT.

25 In this context, it is worth noting that the Harmonized System Committee of the Customs Co-operation Council recently "finalized a request by the United Nations Environment Programme to introduce specific subheadings in the Harmonized System in order to facilitate the collection and comparison of data on the international movement of substances controlled by the Montreal Protocol on Substances that Deplete the Ozone Layer. Considering the urgent need to monitor international trade in these substances and the fact that amendments to the Harmonized System Convention could not be implemented internationally for several years, the Council approved a draft Recommendation asking Member Administrations to take all appropriate actions to insert the additional subheadings in their statistical nomenclatures, as soon as possible". See: Customs Co-operation Council, Annual Report, Bulletin No. 35.

102. The data base, as currently constituted, does not include export measures.[26] However, a considerable number of trade measures for environmental purposes consists of export measures. Examples are bans on exports of domestically prohibited dangerous and hazardous substances or bans on exports of logs in the Pacific north-west of the United States. In an initial stage, the UNCTAD secretariat will continue to give priority to import measures. An important part of environmental trade measures will therefore not be covered for some time. At a later stage efforts should be made to incorporate these measures into the data base.

Conclusions

103. The interlinkage between international trade and the environment is a relatively new issue. There is little empirical evidence showing that environmental measures have had an impact on trade. Hence questions concerning what kind of measures to include in the data base and at which level of detail are far from unambiguious. The question of data base use, which ultimately indicates the measures to be included (e.g. to analyse to what extent measures affect international trade or what role environmental considerations should play in trade policies), also needs to be studied.

104. In the process of adjusting the data base to include environmental measures, the secretariat is simultaneously dealing with several issues: (a) collection of information; (b) consideration of the question of definitions and methodology; (c) consideration of tools that need to be developed to analyse the extent to which measures may affect international trade; and (d) required adjustments in the data base coding system itself. It is expected that there will be cross-fertilization in the four areas of action.

A. Collection of information

105. An important activity is the collection of information. Visits to a number of capitals were planned with a view to discussing problems of definitions and methodology and, at the same time, collecting relevant information. The experience gained during these discussions was expected to assist the UNCTAD secretariat in preparing a framework to be used to collect further information from member States.

B. Definitions

106. Environmental regulations are qualitatively different from most border trade measures, such as licensing and quotas, which traditionally have constituted the core of the Trade Control Measures Information System data base. Although it is not necessary to have full agreement on the measures to be covered in the data base, there is a need to evolve a minimum level concensus on the kind of measures to be included in the data base, the detail of information to be encoded and the priorities to be established (e.g. for the encoding of information on environmental regulations, particularly with regard to standards and labelling requirements). The UNCTAD secretariat may have to give priority to selected product categories. For this purpose, independent expert advice will also be sought.

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[26] Except for voluntary export restraint arrangements which constitute quotas on exports to specific foreign markets which are administered by exporting countries, but which are imposed on them by importing countries.

C. Analytical instruments

107. In the past, an important analytical use of the data base has been that of measuring the extent and trends in the application of border trade measures. Such analysis has been undertaken principally on the basis of quantitative indicators (trade coverage and frequency indices). There is no doubt that the analysis of the extent to which environmental measures affect international trade would require the development of a new analytical framework.

D. The data base coding system

108. Although the existing data base coding system can be used to encode information on trade measures applied on environmental grounds, for the systematic and meaningful coverage of environmental measures having a potential bearing on trade, it may become necessary to enlarge the descriptive and bibliographic parts of the data base. The exact extent of adjustments required will become evident only as work progresses.

E. Requirements for substantive and financial inputs

109. For the establishment of the data base, the secretariat had benefitted in the past from contacts with member States, informal expert meetings, consultants' reports and considerable financial support from UNDP. It appears that for the successful implementation of the activities mentioned in this paper, it will be beneficial to draw on similar inputs. The secretariat is planning to request experts to prepare reports and to convene a number of informal meetings to support this work. It is hoped that such activities will benefit from the substantive and financial support of UNCTAD's member States.

Annex

INTERNATIONAL ENVIRONMENTAL AGREEMENTS THAT EMPLOY TRADE RESTRICTIONS[27]

Agreements concerning wildlife other than fish and whales:

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere

African Convention on the Conservation of Nature and Natural Resources

Convention between United States and Great Britain (for Dominion of Canada) for the protection of Migratory Birds in the United States and Canada

Convention between the United States of America and the United Mexican States for the Protection of Migratory Birds and Game Mammals

Convention between the United States and Japan for the Protection of Migratory Birds and Birds in Danger of Extinction, and their Environment

Convention between the United States of America and the U.S.S.R. concerning the Conservation of Migratory Birds and their Environment

International Convention for the Protection of Birds

Agreement on the Conservation of Polar Bears

Arrangement between the United States of America and Canada on Raccoon Dog Importation

International Plant Protection Agreement

North American Plant Protection Agreement

Plant Protection Agreement for the South East Asia and Pacific Region

Convention for the Establishment of the European and Mediterranean Plant Protection Organization

Phyto-Sanitary Convention for Africa

Agreements concerning archaeological, cultural, historical, or natural heritage:

Treaty of Cooperation Between the United States and the United Mexican States Providing for the Recovery and Return of Stolen Archaeological, Historical and Cultural Properties

Agreement Between the United States and the Republic of Peru for the Recovery and Return of Stolen Archaeological, Historical and Cultural Properties

Agreement Between the United States and Guatemala for the Recovery and Return of Stolen Archaeological, Historical and Cultural Properties

Convention on the means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property

Source: United States International Trade Commission, "International Agreements to Protect the Environment and Wildlife", USITC Publication 2351, January 1991.

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[27] Excludes certain agreements which also use trade instruments, but only with regard to non-participants.